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35th Annual Conference  
of the

35<sup>e</sup> conférence annuelle  
des

Government  
Publications



## Provincial Ministers of Mines

## Ministres provinciaux des Mines

## Proceedings

## Compte Rendu

Toronto, Ontario  
September 10, 11, 12, 1978

à Toronto (Ontario)  
les 10, 11, et 12 septembre 1978



# Proceedings

of the Thirty-fifth Annual Conference  
of the Provincial Ministers of Mines

# Compte Rendu

de la trente-cinquième conférence annuelle des  
Ministre provinciaux des Mines

**Theme:**

"Has Canada a future as a Metal Producer in the  
1980s?"

Toronto, Ontario

September 10, 11, and 12, 1978

**Chairman:**

Honourable James A.C. Auld

**Deputy Chairman:**

Dr. J.K. Reynolds

**Theme:**

"Est-ce que le Canada aura un avenir en tant que  
producteur de métaux dans les années 80?"

tenue à Toronto (Ontario)

les 10, 11 et 12 septembre 1978

**Président**

l'honorables James A.C. Auld

**Co-président**

Dr J.K. Reynolds

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## Table of contents

## Table des matières

- 5 Dates and Places of the Annual Conferences of the Provincial Ministers of Mines
- 6 Provincial Ministers and Deputy Ministers of Mines
- 7 Group Picture
- 8 Programme
- 15 List of Registered Delegates and Observers
- 20 List of Ladies Present

### **Opening plenary session**

### **Séance plénière d'ouverture**

- 24 Opening remarks by The Honourable James A.C. Auld
- Keynote Addresses
- 26 by Mr. H. Ronald Fraser
- 32 by Mr. Gerald H.D. Hobbs

### **Submission of briefs to ministers**

### **Présentation de mémoires aux ministres**

- 37 Alberta Chamber of Resources by Harold V. Page
- 39 Canadian Geoscience Council by G.W. Mannard
- 41 Canadian Geotechnical Society by J.I. Adams
- 43 Coal Association of Canada by Garnet T. Page
- 44 Geological Association of Canada by D.W. Strangway
- 46 Metric Commission of Canada by M.N. Collison
- 47 Mining Association of Canada by U. Rath
- 50 New Brunswick Prospectors and Developers Association by Derek E. McBride
- 51 Ontario Mining Association by J.E. Finlay
- 54 Pamour Porcupine Mines Limited by D.E.G. Schmitt
- 56 Prospectors and Developers Association by Edward G. Thompson
- 60 Shell Canada Resources Limited by Paul S. Seiferling
- 62 United Steelworkers of America by Stewart Cooke

### **Committee reports and recommendations**

### **Rapports et recommandations des comités**

- 65 Committee No. 1—Technical
- 75 Committee No. 2—Financial and Statistical
- 80 Committee No. 3—Social

### **Closing plenary session**

### **Séance plénière de clôture**

- 83 Closing remarks by The Honourable James A.C. Auld

### **Appendices**

- 87 **Appendix to the Report of Committee No. 2**
  - 1. Federal/Provincial Mineral Taxation Review Update by Fred Hall
  - 2. What are the economic impacts of the Quebec metal mining sector and who benefits from them by J.M.A. Gagnon
- 94 **Appendix to the Report of Committee No. 3**
  - 1. Impact of the mineral industry on regional development—The North Shore of the St. Lawrence River, and iron ore by Paul J. Bourassa
  - 2. Occupational health and safety in the mining industry by Bob Green

### **Aggregate resource management seminar**

### **Séminaire sur la gestion des agrégats**

- 101 Developing the data base for an aggregate inventory—a review of Quaternary and Paleozoic geology mapping progress in Ontario by Owen L. White
- 103 The aggregate resources inventory programme by G.J. Burwasser
- 104 Protecting mineral aggregates—a provincial government role—the Ontario experience by S.E. Yundt



**Dates and Places of the  
Annual Conferences  
of the Provincial Ministers of Mines**

<b>Conference</b>	<b>Date</b>	<b>Place</b>
First	1945 April 14-16	Quebec, P.Q.
Second	1945 November 22-23	Toronto, Ontario
Third	1946 September 23-27	Winnipeg, Manitoba
Fourth	1947 September 3-5	Keltic Lodge, Nova Scotia
Fifth	1948 September 2-4	Jasper, Alberta
Sixth	1949 September 7-10	Fredericton, New Brunswick
Seventh	1950 September 13-16	Victoria, British Columbia
Eighth	1951 September 4-8	Saskatoon, Saskatchewan
Ninth	1952 September 15-17	Quebec, P.Q.
Tenth	1953 September 16-18	Niagara Falls, Ontario
Eleventh	1954 September 20-22	Winnipeg, Manitoba
Twelfth	1955 September 12-14	Keltic Lodge, Nova Scotia
Thirteenth	1956 September 10-12	Lake Louise, Alberta
Fourteenth	1957 September 4-6	Vancouver, British Columbia
Fifteenth	1958 September 3-5	St. Andrews, New Brunswick
Sixteenth	1959 September 14-16	Regina, Saskatchewan
Seventeenth	1960 October 16-19	Quebec, P.Q.
Eighteenth	1961 September 17-20	Toronto, Ontario
Nineteenth	1962 September 16-18	Winnipeg, Manitoba
Twentieth	1963 September 15-18	Halifax, Nova Scotia
Twenty-first	1964 September 6-9	Banff, Alberta
Twenty-second	1965 September 12-15	Victoria, British Columbia
Twenty-third	1966 September 18-21	Saint John, New Brunswick
Twenty-fourth	1967 September 17-20	Regina, Saskatchewan
Twenty-fifth	1968 September 15-18	Quebec, P.Q.
Twenty-sixth	1969 September 14-17	Toronto, Ontario
Twenty-seventh	1970 September 7-10	Winnipeg, Manitoba
Twenty-eighth	1971 September 12-15	Halifax, Nova Scotia
Twenty-ninth	1972 September 10-13	Edmonton, Alberta
Thirtieth	1973 September 30 October 2	Victoria, British Columbia
Thirty-first	1974 October 6-8	Moncton, New Brunswick
Thirty-second	1975 September 14-16	Saskatoon, Saskatchewan
Thirty-third	1976 August 29-31	St. John's, Newfoundland
Thirty-fourth	1977 September 11-13	Quebec, P.Q.
Thirty-fifth	1978 September 10-12	Toronto, Ontario

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## **Provincial Ministers and Deputy Ministers of Mines**

### **Ministers of Mines**

#### **Honourable A. Brian Peckford**

Minister of Mines and Energy  
Newfoundland

#### **Honourable John H. Maloney**

Minister of Industry and Commerce  
Prince Edward Island

#### **Honourable J. William Gillis**

Minister of Mines  
Nova Scotia

#### **Honourable Roland C. Boudreau**

Minister of Natural Resources  
New Brunswick

#### **Honourable Yves Bérubé**

Minister of Natural Resources  
Quebec

#### **Honourable James A.C. Auld**

Minister of Natural Resources  
Ontario

#### **Honourable A. Brian Ransom**

Minister of Mines Resources and  
Environmental Management  
Manitoba

#### **Honourable John R. Messer**

Minister of Mineral Resources  
Saskatchewan

#### **Honourable Donald R. Getty**

Minister of Energy and Natural Resources  
Alberta

#### **Honourable James R. Chabot**

Minister of Mines and Petroleum Resources  
British Columbia

### **Deputy Ministers**

#### **John H. McKillop**

Newfoundland

#### **David E. Morrison**

Prince Edward Island

#### **John C. Smith**

Nova Scotia

#### **R.E. Hanusiak**

New Brunswick

#### **André Saumier**

Quebec

#### **Dr. J.K. Reynolds**

Ontario

#### **John S. Roper (acting)**

Manitoba

#### **Robert H. Moncur**

Saskatchewan

#### **Dr. G.B. Mellon**

Alberta

#### **Dr. James T. Fyles**

British Columbia

**Provincial Ministers of Mines**  
**35th Annual Conference,**  
**Toronto, Ontario, 1978**



**Seated** (Left to Right): Hon. A. Brian Ransom, Manitoba; Hon. Yves Bérubé, Québec; Hon. James A.C. Auld, Ontario; Hon. A. Brian Peckford, Newfoundland.

**Standing** (Left to Right): John C. Smith, Nova Scotia; Michael Day, Alberta; J.S. Roper, Manitoba; André Saumier, Québec; J.K. Reynolds, Ontario; James T. Fyles, British Columbia; John H. McKillop, Newfoundland; R.E. Hanusiak, New Brunswick; Robert H. Moncur, Saskatchewan.

## General Programme

### Conference Theme:

"Has Canada a Future as a Metal Producer in the 1980s?"

### Friday, September 8

#### 9 a.m.-5 p.m.

Meeting of Chief Inspectors of Mines (York room)

12 noon-1 p.m.

#### Luncheon for Chief Inspectors of Mines

(Library Room)

### Sunday, September 10

#### 9 a.m.-5 p.m.

Meeting of Provincial Geologists

(Manitoba Room)

#### 9 a.m.-5 p.m.

Executive Meeting of National and Provincial Mining Associations (Quebec Room)

12 noon-4 p.m.

Registration (Main Mezzanine Foyer)

### Monday, September 11

#### 8 a.m.-12 noon

Registration (Main Mezzanine Foyer)

#### 9 a.m.-12 noon

Opening Plenary Session (Canadian Room)

Chairman—Honourable James A.C. Auld

Minister of Natural Resources Ontario

#### 9 a.m.-9:15 a.m.

Chairman's address of welcome

**Keynote addresses**—What steps should be taken to improve Canada's position as a metal producer in the 1980s?

#### 9:15 a.m.-10 a.m.

Speaker—Mr. H. Ronald Fraser, Chairman of the Board, Hudson Bay Mining and Smelting Co. Ltd.

10 a.m.-10:15 a.m.

#### Coffee Break

10:15 a.m.-11 a.m.

Speaker—Mr. Gerald H. D. Hobbs, Chairman, Cominco Ltd.

#### 11:15 a.m.-12 noon

Comments and Questions

12 noon-1:30 p.m.

#### Luncheon for Delegates

(Canadian Room)

12 noon-2:30 p.m.

#### Reception and Luncheon for Ministers and Guests

(Upper Canada Room)

1:30 p.m.-5 p.m.

Committee Meetings (see Committee Programme for agendas)

130 p.m.-

Committee No. 1: Technical (Quebec Room)

1:30 p.m.-

Committee No. 2: Financial and Statistical (Manitoba Room)

1:30 p.m.-

Committee No. 3: Social (British Columbia Room)

2:30 p.m.-2:45 p.m.

Coffee Break

## Programme général

### Thème de la conférence:

"Est-ce que le Canada aura un avenir en tant que producteur de métaux dans les années 80?"

### Vendredi 8 septembre

#### 9 h à 17 h

Réunion des inspecteurs en chef des mines (salon "York")

Midi à 13 h

#### Déjeuner—inspecteurs en chef des mines

(salon "Library")

### Dimanche 10 septembre

#### 9 h à 17

Réunion des géologues provinciaux (salon "Manitoba")

#### 9 h à 17 h

Séance d'administration des associations des mines nationale et provinciales (salon "Quebec")

#### midi à 16 h

Inscriptions (mezzanine)

#### 13 h à 16 h

Séminaire sur la gestion des agrégats: "L'exemple de l'Ontario" (suite mercredi) (salon "British Columbia")

#### 15 h 15

Les autobus quittent l'hôtel Royal York (entrée rue Front) pour Kleinburg

#### 18 h à 22 h

Réception et Buffet à Kleinburg (galerie McMichael: collection d'art canadien)

#### 22 h

Les autobus, repartent de Kleinburg pour l'hôtel Royal York.

### Lundi 11 septembre

#### 8 h à midi

Inscriptions (mezzanine)

#### 9 h à midi

Session plénière d'ouverture (salon "Canadian")

Président: L'honorable James A.C. Auld

Ministre des Richesses naturelles de l'Ontario

#### 9 h à 9 h 15

Allocution de bienvenue du président

*Allocutions sur le thème:* "Quelles sont les mesures à prendre pour améliorer la position du Canada en tant que producteur de métaux dans les années 80?"

#### 9 h 15 à 10 h

Conférencier: M.H. Ronald Fraser président du conseil de Hudson Bay Mining and Smelting Co. Ltd.

#### 10 h à 10 h 15

#### Pause-café

#### 10 h 15 à 11 h

Conférencier: M. Gerald H.D. Hobbs, Président de Cominco Ltd.

#### 11 h 15 à midi

Commentaires et questions

**2:45 p.m.-5 p.m.**

Submission of briefs to Ministers, as pre-arranged  
(Upper Canada Room)

**6 p.m.**

Buses leave for Ontario Place  
(Front St. entrance of Royal York Hotel)

**6:30 p.m.-10 p.m.**

Reception and Conference Dinner for Delegates  
and Wives (Ontario Place)

Entertainment: Cinesphere—“North of Superior”  
and “Ontario Summertide”

**10:00 p.m.-**

Buses return to Royal York Hotel

**Tuesday, September 12****9 a.m.-11:15 a.m.****Ministers’ Discussion Groups****1 p.m.-4 p.m.**

Aggregate Resource Management Seminar  
“The Ontario Experience” (continues on  
Wednesday) (British Columbia Room)

**5:15 p.m.-**

Buses leave for Kleinburg from Front Street  
entrance of Royal York Hotel

**6 p.m.-10 p.m.**

Reception and buffet supper at Kleinburg  
(McMichael Gallery: Canadian Collection)

**10 p.m.-**

Buses return to Royal York Hotel

**9 a.m.-10 a.m.**

Honourable Yves Bérubé Topic: Commodity  
Agreements Pro & Con (Quebec Room)

**9 a.m.-10 a.m.**

Honourable A. Brian Peckford Topic: Provincial  
Taxation Policy (Manitoba Room)

**9 a.m.-10 a.m.**

Honourable James R. Chabot Topic:  
Government Participation in the Mining Business  
(British Columbia Room)

**10 a.m.-10:15 a.m.****Coffee Break****10:15 a.m.-11:15 a.m.**

Honourable Frank S. Miller (Treasurer of Ontario)  
Topic: Improving the Investment Climate  
(British Columbia Room)

**11:30 a.m.-12:30 p.m.**

Future Opportunities for Canadian Mining—  
Visual brief by the Mining Association of Canada  
(Canadian Room)

**12:30 p.m.-2 p.m.**

**Luncheon-Delegates** (Canadian Room)

**12:30 p.m.-3 p.m.**

**Luncheon meeting-MINISTERS AND DEPUTY  
MINISTERS** (Library Room)

**3 p.m.-4 p.m.**

Closing Plenary Session (Canadian Room)

**midi à 13 h 30**

**Déjeuner-Délégués** (salon “Canadian”)

**midi à 14 h 30**

**Réception et déjeuner-Ministres et invités**  
(salon “Upper Canada”)

**13 h 30 à 17 h**

Réunions des comités (voir le programme des  
comités pour l’ordre du jour)

**13 h 30**

Comité no 1—questions techniques  
(salon “Quebec”)

**13 h 30**

Comité no 2—aspects financiers et statistiques  
(salon “Manitoba”)

**13 h 30**

Comité no 3—aspects sociaux (salon “British  
Columbia”)

**14 h 30 à 14 h 45****Pause-café****14 h 45 à 17 h**

Présentation des mémoires aux ministres tel que  
prévu (salon “Upper Canada”)

**18 h**

Les autobus quittent l’hôtel Royal York (entrée rue  
Front) pour la Place de l’Ontario

**18 h 30 à 22 h**

Réception et dîner-conférence pour les délégués  
et leurs épouses (Place de l’Ontario)

Spectacle à la Cinéosphère: “North of Superior” et  
“Ontario Summertide”

**22 h**

Les autobus repartent à l’hôtel Royal York.

**Mardi 12 septembre****9 h à 11 h 15****Groupe de discussion des ministres****9 h à 10 h**

L’Honorable Yves Bérubé Sujet: Accords sur les  
produits de base: le pour et le contre  
(salon “Quebec”)

**9 h à 10 h**

L’honorable A. Brian Peckford Sujet: politique de  
fiscalité provinciale (salon “Manitoba”)

**9 h à 10 h**

L’honorable James R. Chabot Sujet: L’industrie  
minière et la participation du gouvernement (salon  
“British Columbia”)

**10 h à 10 h 15****Pause-café****10 h 15 à 11 h 15**

L’honorable Frank S. Miller (Trésorier de l’Ontario)  
Sujet: Amélioration du climat des investissements  
(salon “British Columbia”)

**11 h 30 à 12 h 30**

Les possibilités, d’avenir de l’industrie minière au  
Canada: exposé accompagné de diapositives par  
l’Association des mines du Canada (salon  
“Canadian”)

**12 h 30 à 14 h**

**Déjeuner-Délégués**

(salon “Canadian”)

**12 h à 15 h**

**Déjeuner-réunion-Ministres et sous-ministres**  
(salon “Library”)

**15 h à 16 h**

Séance plénière de clôture (salon “Canadian”)

Aggregate Management Session (continued from Sunday)

**9 a.m.-12 noon**

Field Trip: Visit to typical pits and quarries illustrative of problems and achievements. (Buses leave from Front St. entrance of Royal York Hotel at 9:00 a.m. Return approx. 12:00 noon)

Visit to Pickering Nuclear Power Generating Station (Buses leave from Front St. entrance of Royal York at 9:00 a.m. and return 1:00 p.m.)

Session sur la gestion des agrégats (suite de la session de dimanche)

**9 h à midi**

Excursion: visite de carrières illustrant l'existence de certains problèmes et leur résolution. (Les autobus quittent l'hôtel Royal York (entrée de la rue Front) à 9 h et reviennent vers midi à l'hôtel).

Visite de la centrale nucléaire de Pickering (Les autobus quittent l'hôtel Royal York (entrée rue Front) à 9 h et reviennent à l'hôtel vers 13 h).

## **Committee Agendas**

The three committees will meet on Monday, September 11, from 1:30 – 5 p.m. in the rooms designated below.

### **Committee Number 1:**

Technical (Quebec Room)

Technical aspects of the Mineral Industry in the fields of Exploration and Mining Operations.

Chairman: Mr. André Saumier

Co-Chairman: Mr. R.E. Hanusiak

1. Report of legislation enacted or proposed since the 1977 conference.
2. Bill C-14—Update by Saskatchewan.
3. Report of subcommittee of Chief Inspectors of Mines.
4. Report of Subcommittee of Provincial Geologists.
5. Rights to enter upon mining lands.
6. Government involvement in Aggregate Resource Management.
7. What can Provincial Governments do in the technical field to better assure Canada's future as a metal producer in the 1980s?
8. Other business.

### **Committee Number 2:**

Financial and Statistical (Manitoba Room)

Financing, Marketing; Royalties, Taxation, Tariffs and Mineral Statistics.

Chairman: Mr. John H. McKillop

Co-Chairman: Mr. Robert H. Moncur

1. Review of legislation enacted or proposed since the 1977 conference.
2. Report on Federal-Provincial Tax Negotiations.
3. Transportation in the mineral industry, (Hall Commission recommendations)
4. Mineral Production Income: How it is used by producers (Quebec example).
5. Burden of environmental improvement requirements on the mining industry.
6. What can Provincial Governments do through policy and legislation to better assure Canada's future as a metal producer in the 1980s?
7. Mineral Statistics—Decentralization progress.
8. Other business.

### **Committee Number 3:**

Social (British Columbia Room) Mineral industry problems pertaining to environment, manpower, education and other social matters.

Chairman: Dr. J.K. Reynolds

Co-Chairman: Dr. James T. Fyles

1. Review of legislation enacted or proposed since the 1977 conference.
2. The impact of the mineral sector on regional development.
3. Social considerations in remote mine site development (Fear of Flying).

## **Ordre du jour des comités**

Les trois comités se réuniront le lundi 11 septembre de 13 h 30 à 17 h dans les salons indiqués ci-dessous:

### **Comité Numéro 1**

Questions techniques (Salon "Quebec")

Aspects techniques de l'industrie minière dans les domaines de l'exploration et de l'exploitation minière

Président: M. André Saumier

Co-président: M.R.E. Hanusiak

1. Rapport sur les lois adoptées ou proposées depuis la conférence de 1977
2. Bill C-14—Mise à jour de la Saskatchewan
3. Rapport du sous-comité des inspecteurs en chef des mines
4. Rapport du sous-comité des géologues provinciaux
5. Droits d'entrée sur les terrains miniers
6. Participation du gouvernement à la gestion des agrégats
7. Que peuvent faire les gouvernements provinciaux dans le domaine technique pour mieux assurer l'avenir du Canada comme producteur de métaux dans les années 80?
8. Autres sujets

### **Comité Numéro 2**

Aspects financiers et statistiques (Salon "Manitoba")

Financement, mise en marché, redevances, imposition, tarifs douaniers et statistiques minières

Président: M. John H. McKillop

Co-président: M. Robert H. Moncur

1. Étude des lois adoptées ou proposées depuis la conférence de 1977
2. Rapport sur les négociations fiscales fédérales-provinciales
3. Transport dans l'industrie minière (recommandations de la Commission Hall)
4. Revenus de la production minère: Comment sont-ils utilisés par les producteurs? (exemple du Québec)
5. Fardeau que représentent les exigences d'amélioration de l'environnement sur l'industrie minière
6. Que peuvent faire les gouvernements provinciaux au point de vue politiques et lois pour mieux assurer l'avenir du Canada comme producteur de métaux dans les années 80?
7. Statistiques minières—Progrès de la décentralisation
8. Autre sujets

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- 4. The role of the worker in the decision-making process.
- 5. What can Provincial Governments do in the social field to better assure Canada's future as a metal producer in the 1980s?
- 6. Other business.

**Comité Numéro 3**

Aspects sociaux (Salon "British Columbia")

Problèmes de l'industrie minière relatifs à l'environnement, à la main-d'œuvre, à l'éducation et à d'autres questions sociales.

Président: Dr J.K. Reynolds

Co-président: Dr James T. Fyles

- 1. Étude des lois adoptées ou proposées depuis la conférence de 1977
- 2. Influence du secteur minier sur le développement régional
- 3. Considérations sociales dans l'aménagement des centres miniers éloignés (peur de l'avion)
- 4. Rôle du travailleur dans le processus décisionnel
- 5. Que peuvent faire les gouvernements provinciaux dans le domaine social pour mieux assurer l'avenir du Canada comme producteur de métaux dans les années 80?
- 6. Autres sujets

## Ladies' Programme

## Programme des dames

### Sunday, September 10

#### 6 p.m.–10 p.m.

Reception and Buffet Supper at Kleinburg (McMichael Gallery: Canadian Collection)  
Buses depart from Front Street entrance of hotel at 5:15 p.m.

### Monday, September 11

#### 9 a.m.–9:30 a.m.

Assemble in Saskatchewan Room, Main Mezzanine floor, Royal York Hotel for coffee and pastry.

#### 9:30 a.m.–10 a.m.

Film: "Toronto"

#### 10:15 a.m.–12 noon

Visit to Ontario Science Centre. Depart by bus from Front Street entrance of hotel.

#### 12:30 p.m.

Luncheon, Heritage Room, Ontario Science Centre.

#### 2 p.m.

Buses depart for Royal York Hotel and Eaton Centre shopping complex.

#### 3 p.m.

Arrive at Royal York Hotel.

#### 6:30 p.m.–10 p.m.

Reception and Conference Dinner for Delegates and Wives (Ontario Place)

Entertainment: Cinesphere—"North of Superior" and "Ontario Summertide".

Buses depart from main entrance of hotel at 6 p.m., and return to hotel at 10 p.m.

### Tuesday, September 12

#### 9:30 a.m.–10 a.m.

Assemble in Saskatchewan Room for coffee and pastry.

#### 10:15 a.m.

Visit to Royal Ontario Museum. Depart by bus from Front Street entrance of hotel.

#### 10:30 a.m.–12 noon

Guided tour of Museum's collection.

#### 12:30 p.m.

Luncheon, The Plaza Room, Main Floor, Park Plaza Hotel.

#### Post Luncheon

Free time. Browse in the nearby Yorkville shopping district.

### Dimanche 10 septembre

#### 18 h à 22 h

Réception et buffet à Kleinburg (Galerie McMichael: Collection d'art canadien)  
Départ des autobus de l'hôtel (entrée rue Front) à 17 h 15

### Lundi 11 septembre

#### 9 h à 9 h 30

Rassemblement dans le salon "Saskatchewan", mezzanine principale, hôtel Royal York, pour café et pâtisseries

#### 9 h 30 à 10 h

Film: "Toronto"

#### 10 h 15 à midi

Visite du Centre des sciences de l'Ontario. Départ en autobus de l'hôtel (entrée rue Front)

#### 12 h 30

Déjeuner, Salon "Heritage", Centre des sciences de l'Ontario

#### 14 h

Départ des autobus vers l'hôtel Royal York et le centre d'achats Eaton Centre

#### 14 h

Arrivée à l'hôtel Royal York

#### 18 h 30 à 22 h

Réception et dîner-conférence pour les délégués et leurs épouses (Place de l'Ontario)

Spectacle à la Cinésphère: "North of Superior" et "Ontario Summertide"

Départ des autobus à 18 h de l'hôtel (entrée rue Front) et retour à l'hôtel à 22 h

### Mardi 12 septembre

#### 9 h 30 à 10 h

Rassemblement dans le salon "Saskatchewan" pour café et pâtisseries

#### 10 h 15

Visite du Musée royal de l'Ontario. Départ en autobus de l'hôtel (entrée rue Front)

#### 10 h 30 à midi

Visite guidée de la collection du Musée

#### 12 h 30

Déjeuner, salon "The Plaza", rez-de-chaussée, hôtel Park Plaza

#### Après le déjeuner

Temps libre. Promenade dans le quartier commercial voisin de Yorkville

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**Wednesday, September 13**

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**9 a.m.**

Assemble at front entrance, Royal York Hotel, for visit to Pickering Nuclear Generating Station.

**10 a.m.-12 noon**

Guided tour of the Pickering Nuclear Generating Station and the Nuclear Communications Centre.

**1 p.m.**

Arrive at Royal York Hotel.

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**Mecredi 13 septembre**

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**9 h**

Rassemblement devant l'entrée principale de l'hôtel Royal York pour aller visiter la centrale nucléaire de Pickering

**10 h à midi**

Visite guidée de la centrale nucléaire de Pickering et du centre de communications

**13 h**

Arrivée à hôtel Royal York

**List of delegates registered at the conference**

**Liste des délégués présents à la conférence**

**Newfoundland**

**Barroll, A.E.**  
Mobil Oil Canada Ltd.  
**Campbell, W.A.**  
Iron Ore Company of Canada  
**Carter, Frank H.**  
Wabush Mines  
**Coristine, James P.**  
Iron Ore Company of Canada  
**Duff, D.E.**  
Eastcan Exploration Limited  
**Fleming, John M.**  
Asst. Deputy Minister, Mines and Energy  
**Foster, Harold D.**  
Flintkote Holdings Ltd.  
**Greene, B.A.**  
Department of Mines and Energy  
**Grimley, Peter H.**  
Brinco Ltd.  
**Hewlett, Ford**  
Hewlett Group Limited  
**Hillier, H.D.**  
Department of Finance  
**Hriskovich, M.E.**  
Aquitaine Canada Ltd.  
**Hughes, William P.**  
Paddon Hughes Development Co. Ltd.  
**Kipnis, Norman**  
Department of Mines and Energy  
**Magyar, William B.**  
Technical Economists Ltd.  
**March, R. Roger**  
Department of Mines and Energy  
**May, John**  
Tecam Ltd.  
**McKee, W.A.**  
Canadian Industries Limited  
**McKillop, John H.**  
Deputy Minister, Mines and Energy  
**Pearson, W.J.**  
Price Company Limited  
**Peckford, Hon. Brian A.**  
Minister, Mines and Energy  
**Penney, Paul E.**  
Iron Ore Company of Canada  
**Snyder, Hugh R.**  
Brinco Ltd.  
**Spracklin, Lorne**  
Department of Mines and Energy  
**Stauff, Peter**  
Imperial Oil Limited  
**White, J.F.**  
Labrador Mining and Exploration Co., Ltd.

**Prince Edward Island**

**Brown, Jack**  
Hudsons Bay Oil and Gas Co. Ltd.  
**Hall, Norman G.**  
Director, Energy and Mineral Resources  
**Trent, Peter**  
Petrofina Canada Limited

**Nova Scotia**

**Amirault, John A.**  
Department of Mines  
**Baldwin, Dr. A.B.**  
Shell Canada Resources Limited  
**Cameron, J. Robert**  
National Gypsum (Canada) Ltd.  
**Graham, James M.**  
Georgia-Pacific Corporation  
**Gillis, Hon. J. William**  
Minister, Mines  
**Hansuld, John A.**  
Amax Exploration Inc.  
**Hopper, W.H.**  
Petro-Canada  
**James, Carroll R.**  
Department of Mines  
**Kerby, D.S.**  
Preussag Canada Limited  
**MacDonald, J.A.**  
Getty Mines Limited  
**MacLeod, J.M.**  
Shell Canada Resources Limited  
**Murray, Daniel A.**  
Department of Mines  
**Pfister, R.O.**  
Esso Minerals Canada  
**Schwartz, Irving**  
Novaco Ltd.  
**Scott, Fenton**  
Esso Minerals Canada  
**Scott, John B.**  
Montreal Engineering Company Limited  
**Shea, Frank S.**  
Department of Mines  
**Smith, John C.**  
Deputy Minister, Mines

**New Brunswick**

**Barnett, Donald E.**  
Department of Natural Resources  
**Bélieau, Lucien C.**  
Sullivan Mining Group Ltd.  
**Boudreau, Hon. Roland C.**  
Minister, Natural Resources  
**Bourgoin, B.**  
Consolidated Durham Mines and Resources Ltd.  
**Buzas, A.**  
Anaconda Canada Limited

<b>Coughlan, E.K.</b>	Department of Natural Resources	<b>Keenan, P.J.</b>	Patino N. V.
<b>Davis, D.W.</b>	Department of Natural Resources	<b>Langlois, Gonzague</b>	Ass. des Mines de Métaux du Québec
<b>Gemmell, Don. E.</b>	Department of Natural Resources	<b>Laurin, André F.</b>	Ministère des Richesses naturelles
<b>Gilbey, John W.G.</b>	Billiton Exploration Canada Limited	<b>McAlpine, Charles</b>	Campbell Chibougamou Mines Ltd.
<b>Greer, George J.</b>	Department of Natural Resources	<b>Messel, Michael J.</b>	Ass. des Mines d'Amiante du Québec
<b>Hamilton, John B.</b>	Department of Natural Resources	<b>Paradis, Guy</b>	Ministère des Richesses naturelles
<b>Hanusiak, R.E.</b>	Deputy Minister, Natural Resources	<b>Pintal, Jean</b>	Ministère des Affaires Intergouvernementales
<b>Harbinson, V. Noble</b>	Consolidated Durham Mines and Resources	<b>Pouliot, Denys</b>	Ministère des Richesses naturelles
<b>James, William</b>	Noranda Mines Limited: Brunswick Mining and Smelting Corp., Ltd.	<b>Roy, Donald</b>	Ministère des Richesses naturelles
<b>Jack, Peter S.</b>	Potash Company of America	<b>Saumier, André</b>	Sous-ministre, Richesses naturelles
<b>Kyle, Andrew J.</b>	International Minerals & Chemical Corp. (Canada) Limited	<b>Sirois, Roger</b>	Ministère des Richesses naturelles
<b>McKee, D. Maurice</b>	Heath Steele Mines Ltd.	<b>St-Onge, Victor</b>	La Compagnie Minière Québec Cartier
<b>Moerman, John W.</b>	Bruswick Mining and Smelting Corp. Ltd.	<b>Tanguay, Louis</b>	Ministère des Richesses naturelles
<b>Potter, Dr. R. Richard</b>	Department of Natural Resources	<b>Tetu, Jean</b>	Ministère des Richesses naturelles
<b>Spence, W.I.</b>	Department of Natural Resources	<b>Thiboutot, Jean-Paul</b>	Ministère des Richesses naturelles
<b>Warren, R.W.</b>	Department of Natural Resources	<b>Verrette, Jean-Louis</b>	Ministère des Richesses naturelles
<b>Young, Alan</b>	Bruswick Mining and Smelting Corp., Ltd.	<b>White, John C.</b>	Les Mines de Cuivre Gaspé Ltée.

#### Québec

<b>Balogh, Alex G.</b>	Ass. des Mines de Métaux du Québec
<b>Beaudet, Raymond</b>	Ministère des Richesses naturelles
<b>Bérubé, Yves</b>	Ministre, Richesses naturelles
<b>Boulva, Charles</b>	Soc. de Développement de la Baie-James
<b>Bourassa, Paul J.</b>	Soquem
<b>Brossard, Leo</b>	Brominco Inc.
<b>Chapleau, Gilbert</b>	Ministère des Richesses naturelles
<b>Cloutier, Bernard</b>	Soquip
<b>Descarreaux, J.</b>	Ass. des Prospecteurs du Québec
<b>Dionne, Gilles</b>	Soc. de Développement de la Baie-James
<b>Dorr, André</b>	Ministère des Richesses naturelles
<b>Drouin, Claude</b>	Ass. des Mines de Métaux du Québec
<b>Filteau, Paul A.</b>	Ass. des Mines d'Amiante du Québec
<b>Gagnon, Réjean</b>	Ass. des Mines de Métaux du Québec
<b>Girardin, R.</b>	Iron Ore Company of Canada
<b>Grenier, Paul E.</b>	Ministère des Richesses naturelles

<b>Keenan, P.J.</b>	Inc Limited
<b>Langlois, Gonzague</b>	Ontario Natural Gas Association
<b>Laurin, André F.</b>	Texasgur Inc.
<b>McAlpine, Charles</b>	Hudson Bay Mining and Smelting Co., Limited
<b>Messel, Michael J.</b>	Newmont Exploration of Canada Ltd.
<b>Paradis, Guy</b>	Ontario Securities Commission
<b>Pintal, Jean</b>	Patino N. V.
<b>Pouliot, Denys</b>	Patino N. V.
<b>Roy, Donald</b>	Patino N. V.
<b>Saumier, André</b>	Patino N. V.
<b>Sirois, Roger</b>	Patino N. V.
<b>St-Onge, Victor</b>	Patino N. V.
<b>Tanguay, Louis</b>	Patino N. V.
<b>Tetu, Jean</b>	Patino N. V.
<b>Thiboutot, Jean-Paul</b>	Patino N. V.
<b>Verrette, Jean-Louis</b>	Patino N. V.
<b>White, John C.</b>	Patino N. V.
<b>Ontario</b>	Patino N. V.
<b>Aiken, Herbert J.</b>	Ministry of Northern Affairs
<b>Airth, M.W.</b>	Ontario Mining Association
<b>Alton, Ron. P.</b>	Ministry of Natural Resources
<b>Anders, Dr. G.</b>	Ministry of Natural Resources
<b>Armstrong, Robert D.</b>	Rio Algom Limited
<b>Auld, Hon. James A.C.</b>	Minister, Natural Resources
<b>Barlow, Roger B.</b>	Ministry of Natural Resources
<b>Baugh, J.E.</b>	Petrofina Canada Ltd.
<b>Beatty, W.W.</b>	Dominion Foundries & Steel Limited
<b>Birch, John W.</b>	Ministry of Natural Resources
<b>Boulay, Richard A.</b>	Bank of Montreal
<b>Bray, Harry S. (Q.C.)</b>	Ontario Securities Commission
<b>Carter, J. Edwin</b>	Inc Limited
<b>Caughey, R. Glen</b>	Ontario Natural Gas Association
<b>Clarke, P.R.</b>	Texasgur Inc.
<b>Collison, Malcolm, N.</b>	Hudson Bay Mining and Smelting Co., Limited
<b>Coope, Dr. J.A.</b>	Newmont Exploration of Canada Ltd.

<b>Curlook</b> , Dr. Walter	Ontario Mining Association	<b>Milne</b> , Dr. Victor G.	Ministry of Natural Resources
<b>Curtis</b> , Ross R.	Bank of Montreal	<b>Mohide</b> , Dr. Thomas P.	Ministry of Natural Resources
<b>de Bastiani</b> , M.J.	Ontario Mining Association	<b>Morgan</b> , K.A.	Gulf Minerals Canada Ltd.
<b>Drury</b> , John J.	Beth Canada Mining Co. Ltd.	<b>Newman</b> , W.K.	Ontario Mining Association
<b>Emery</b> , David J.	Northwest Territories Chamber of Mines	<b>Ogilvy</b> , Cam	Yukon Chamber of Mines
<b>Feinberg</b> , Dr. Joyce	Ministry of Federal-Provincial Affairs	<b>Pye</b> , Dr. E.G.	Ministry of Natural Resources
<b>Ferguson</b> , Grant H. (Q.C.)	Ontario Mining and Lands Commissioner	<b>Reynolds</b> , Dr. J.K.	Deputy Minister, Natural Resources
<b>Finlay</b> , James E.	Ontario Mining Association	<b>Ridout</b> , John E.	Ontario Mining Association
<b>Fraser</b> , H.R.	Hudson Bay Mining and Smelting Co. Limited	<b>Robertson</b> , James A.	Ministry of Natural Resources
<b>Gilchrist</b> , G.H.	United Steelworkers of America	<b>Roman</b> , Stephen B.	Denison Mines Limited
<b>Hall</b> , Fred E.	Ministry of Natural Resources	<b>Rudd</b> , Harold D.	Patino Mines (Quebec) Canada
<b>Harding</b> , Ross G.	Ontario Mining Association	<b>Schmitt</b> , D.E.G.	Ontario Mining Association
<b>Hawkes</b> , Ronald J.	Northwest Territories Chamber of Mines	<b>Skewis</b> , William	Ontario Natural Gas Association
<b>Herridge</b> , A.J.	Asst. Deputy Minister, Natural Resources	<b>Slade</b> , A.G.	Ontario Mining Association
<b>Hill</b> , Mrs. Betty	Ministry of Labour	<b>Thompson</b> , Barton A.	Ontario Mining Association
<b>Hobbs</b> , Gerald H.D.	Cominco Ltd.	<b>Uppal</b> , Atam	Ministry of Treasury and Economics
<b>Hughes</b> , James M.	Ontario Mining Association	<b>Walmsley</b> , Dr. Martin F.	Ministry of Natural Resources
<b>Hurd</b> , Donald B.	Ministry of Natural Resources	<b>White</b> , Dr. Owen L.	Ministry of Natural Resources
<b>Hymas</b> , K.I.	Ontario Mining Association	<b>Yundt</b> , Sheralyn E.	Ministry of Natural Resources
<b>Jewett</b> , George A.	Ministry of Natural Resources	<b>Zwelling</b> , Marc	United Steelworkers of America
<b>Jones</b> , Barry	Ministry of Natural Resources		
<b>Kilburn</b> , L.C.	Falconbridge Copper Ltd.	<b>Manitoba</b>	
<b>Kostuik</b> , John	Denison Mines Limited	<b>Bloy</b> , H.	Mining Association of Manitoba
<b>Kydd</b> , Ms. Susan	Ministry of Natural Resources	<b>Callander</b> , W.K.	Hudson Bay Mining and Smelting Co., Limited
<b>Levack</b> , I. Kenneth	United Steelworkers of America	<b>Gannon</b> , J. Patrick	Department of Finance
<b>Machamer</b> , Jerome F.	Essex Minerals	<b>Glassford</b> , Ronald H.	Department of Mines, Resources and Environmental Management
<b>MacKenzie</b> , David	United Steelworkers of America	<b>Haugh</b> , Dr. Ian	Asst. Deputy Minister, Mines, Resources and Environmental Management
<b>Mahoney</b> , J.E.	Union Gas Ltd.	<b>Hews</b> , Charles F.A.	Inco Metals Company
<b>Marshall</b> , W.J.	Ontario Mining Association	<b>Houston</b> , D.H.	Hudson Bay Mining and Smelting Co.
<b>May</b> , Dr. C. Rodney	Ministry of Labour	<b>Huston</b> , Carl D.	Manitoba Prospectors and Developers Association
<b>McCready</b> , John	Inco Metals Company	<b>Koffman</b> , Albert A.	Manitoba Mineral Resources Limited
<b>McCrodan</b> , Peter B.	Minister of Labour	<b>Lebel</b> , J. Louis	Chevron Standard Ltd.
<b>McGinn</b> , James R.	Ministry of Natural Resources	<b>Lindberg</b> , R.	Sherritt Gordon Mines Limited
<b>Miller</b> , C. George	Centre for Resource Studies	<b>MacKay</b> , Shane	Inco Limited
<b>Miller</b> , Hon. Frank S.	Treasurer of Ontario		

<b>McGrath, M.B.</b> Manitoba Federation of Labour	<b>Dorward, Fred R.</b> Alberta Chamber of Resources
<b>Muzyłowski, M.</b> Granges Exploration (Canada) AB	<b>Fulford, George</b> Department of Energy and Natural Resources
<b>O'Brien, Keith</b> Inco Limited	<b>Getty, Hon. Donald R.</b> Minister, Energy and Natural Resources
<b>Parres, A.L.</b> Manitoba/Saskatchewan Prospectors and Developers Assoc.	<b>Gilmore, R.G.</b> Department of Energy and Natural Resources
<b>Perry, Charles A.</b> Department of Finance	<b>Lanigan, James E.</b> Department of Federal and Intergovernmental Affairs
<b>Ransom, Hon. A. Brian</b> Minister, Mines, Resources and Environmental Management	<b>Lindberg, R.</b> Sherritt Gordon Mines Limited
<b>Roper, J.S.</b> A/Deputy Minister, Resources and Environmental Management	<b>Mellon, Dr. G. Barry</b> Deputy Minister, Energy and Natural Resources
<b>Russell, J.D.</b> Department of Mines, Resources and Environmental Management	<b>Montgomery, C.R.S.</b> Numac Oil and Gas Ltd.
<b>Singh, Dr. Sobharam</b> Department of Mines, Resources and Environmental Management	<b>O'Brien, Bob</b> Solomon Bros.
<b>Williams, C.T.</b> Tantalum Mining Corp. of Canada Ltd.	<b>Ostrosser, R.H.</b> Alberta Chamber of Resources
<b>Saskatchewan</b>	<b>Page, Harold V.</b> Alberta Chamber of Resources
<b>Alderman, John R.</b> Department of Labour	<b>Shield, Dr. Don</b> R. M. Hardy and Associates
<b>Beck, Dr. L.S.</b> Department of Mineral Resources	<b>Wood, Tom P.</b> Department of Energy and Natural Resources
<b>Cheesman, Dr. Ralph L.</b> Saskatchewan Mining Association	<b>British Columbia</b>
<b>Craig, R.K.</b> Saskatchewan Oil and Gas Corporation	<b>Anderson, N. Norman</b> Cominco Ltd.
<b>Forbes, Robert W.</b> Manitoba and Saskatchewan Coal Co.	<b>Bowles, E.J.</b> Ministry of Mines and Petroleum Resources
<b>Kelly, C.J.</b> Saskatchewan Mining Association	<b>Chabot, Hon. James R.</b> Minister, Mines and Petroleum Resources
<b>Kirkland, John S.T.</b> Department of Mineral Resources	<b>Dunn, Wm. St. C.</b> British Columbia and Yukon Chamber of Commerce
<b>Koop, Donald</b> Department of Finance	<b>Eraut, Claire</b> Ministry of Mines and Petroleum Resources
<b>Laxdal, Keith</b> Asst. Deputy Minister, Mineral Resources	<b>Fyles, Dr. James T.</b> Deputy Minister, Mines and Petroleum Resources
<b>Little, George E.</b> Pan-Canadian Petroleum Limited	<b>Green, Robert J.</b> Canadian Association of Industrial, Mechanical and Allied Workers
<b>Maynes, Peter A.</b> Saskatchewan Mineral Resources	<b>Hallbauer, R.E.</b> Mining Association of British Columbia
<b>McKnight, Bruce K.</b> Western Mines Limited	<b>Hick, Bert</b> Office of Intergovernmental Relations
<b>Messer, Hon. John R.</b> Minister, Mineral Resources	<b>Higgs, Frederick G.</b> British Columbia and Yukon Chamber of Mines
<b>Moncur, Robert H.</b> Deputy Minister, Mineral Resources	<b>Keevil, Dr. N.B. Jr.</b> Teck Corporation Limited
<b>Seiferling, Paul S.</b> Assoc. Deputy Minister Mineral Resources	<b>MacGregor, E.R.</b> Asst. Deputy Minister, Mines and Petroleum Resources
<b>Tamaki, Tom S.</b> Assoc. Deputy Minister, Mineral Resources	<b>MacPhail, Robert W.</b> Mining Association of British Columbia
<b>White, Dr. James A.L.</b> Texasgulf Inc.	<b>Matthew, P. Robert</b> Mining Association of British Columbia
<b>Alberta</b>	<b>Mustard, Donald K.</b> British Columbia and Yukon Chamber of Mines
<b>Ashburn, John</b> Department of Labour	<b>Newell, John M.</b> British Columbia and Yukon Chamber of Mines
<b>Cook, Robert C.</b> Department of Energy and Natural Resources	<b>Parliament, J. Harvey</b> Mining Association of British Columbia
<b>Day, Michael J.</b> Asst. Deputy Minister, Energy and Natural Resources	<b>Poyen, J.S.</b> Ministry of Mines and Petroleum Resources

**Riva**, Walter  
Kaiser Resources Ltd.

**Robinson**, W.C.  
Ministry of Mines and Petroleum Resources

**Sutherland Brown**, Dr. A  
Ministry of Mines and Petroleum Resources

**Thomson**, J.S.  
Teck Mining Group Limited

**Government of Canada**

**Cohen**, M.A.  
Deputy Minister (to be confirmed)  
Department of Energy, Mines and Resources

**Craig**, D.  
Department of Indian Affairs and  
Norther Development

**Crandall**, S.A.  
Department of Indian Affairs and  
Northern Development

**Crosby**, Dr. D.  
Department of Energy, Mines and Resources

**Edge**, C. Geoffrey  
National Energy Board

**Eldridge**, J.R.  
Ministry of State for Federal Provincial Relations

**Findlay**, D.C.  
Department of Energy, Mines and Resources

**Fraser**, J.W.  
Department of Indian affairs and  
Northern Development

**Goddard**, J.P.  
Department of Energy, Mines and Resources

**Hodgson**, E.C.  
Department of Energy, Mines and Resources

**Hornal**, R.W.  
Department of Indian Affairs, and  
Northern Development

**Hutchinson**, R.D.  
Department of energy, Mines and Resources

**Jamieson**, Eric D.  
Department of Energy, Mines and Resources

**Jeffery**, William G.  
Department of Energy, Mines and Resources

**Kerr**, Aubrey  
Department of Indian Affairs and  
Northern Development

**Keyes**, Robert J.  
Department of Finance

**Landry**, Richard  
Statistics Canada

**Lapointe**, Michel  
Federal-Provincial Relations Office

**McLeod**, R.R.  
Department of Indian Affairs and  
Northern Development

**Oliver**, A.D.  
Department of Labour, Canada

**Padgham**, W.A.  
Department of Indian Affairs and  
Norther Development

**Patterson**, Jack M  
Department of Indian Affairs and  
Northern Development

**Rockburne**, Carl A.  
Metric Commission of Canada

**Welwood**, Richard J.R.  
Department of Energy, Mines and Resources

**Williams**, Derek A.J.  
Department of Finance

**Pan-Canadian Organizations**

**Adams**, J.I.  
Canadian Geotechnical Society

**Baugh**, J.E.  
Canadian Petroleum Association

**Bristow**, A.B.  
Canadian Petroleum Association

**Bonus**, John L.  
Mining Association of Canada

**Clark**, Dr. J.I.  
Canadian Geotechnical Society

**Costello**, W.O'D.  
Mining Association of Canada

**Doyle**, Tom D.  
Coal Association of Canada

**Drolet**, Jean-Paul  
Canadian Institute of Mining and Metallurgy

**Fletcher**, J.E.  
Canadian Potash Producers Association

**Holt**, Meredith E.  
Prospectors and Developers Association

**Hopkins**, Dennis  
Mining Association of Canada

**Jones**, Stanley W.  
Canadian Association of  
Oilwell Drilling Contractors

**Klarer**, Allen  
Prospectors and Developers Assoc.

**Loucks**, Wilfrid A.  
Coal Association of Canada

**Mahannah**, R.S.  
Coal Association of Canada

**McLennan**, A.M.  
Canadian Potash Producers Assoc.

**Mannard**, Dr. George W.  
Canadian Geoscience Council

**Page**, Garnet T.  
Coal Association of Canada

**Rath**, U.  
Mining Association of Canada

**Reed**, Laurie E.  
Canadian Exploration Geophysical Society

**Sanders**, R.N.  
Coal Association of Canada

**Smith**, Ian  
Canadian Petroleum Association

**Strangway**, D.W.  
Geological Association of Canada

**Tapp**, E.G.  
Canadian Institute of Mining and Metallurgy

**Thompson**, E.G.  
Prospectors and Developers Assoc.

**Windrem**, O.C.  
Canadian Petroleum Association

**List of ladies present**  
**Liste des dames présentes**

**Newfoundland**

**Barroll**, Mrs. Marie  
**Carter**, Mrs. Ruby W.  
**Duff**, Mrs. Norma  
**Hewlett**, Mrs. Joan  
**Hillier**, Mrs. Elizabeth  
**Hughes**, Mrs. Jean  
**Maygar**, Mrs. Doreen  
**May**, Mrs. Marisa  
**McKee**, Mrs. Bernice  
**Penney**, Mrs. Irene D.  
**Staft**, Mrs. Shirley  
**White**, Mrs. Beverley

**Prince Edward Island**

**Trent**, Mrs. Rae

**Nova Scotia**

**Cameron**, Mrs. L. Marie  
**Graham**, Mrs. Kathryn  
**Hansuld**, Mrs. Jane  
**James**, Mrs. Beverley  
**Kerby**, Mrs. Birdeen  
**MacLeod**, Mrs. Beverley  
**Pfister**, Mrs. Barbara  
**Scott**, Mrs. Vilma  
**Shea**, Mrs. Mary N.

**New Brunswick**

**Béliveau**, Mrs. Pauline  
**Buzas**, Mrs. Patricia  
**Gilbey**, Mrs. Carol  
**James**, Mrs. Joanna  
**Kyle**, Mrs. Florence  
**McKee**, Mrs. Clare  
**Moerman**, Mrs. Nel  
**Young**, Mrs. W. Doreen

**Québec**

**Balogh**, Mme Denise  
**Boulva**, Mme Betty  
**Chapleau**, Mme Louise  
**Dorr**, Mme Michelle  
**Drouin**, Mme Mimi  
**Filteau**, Mme Madeleine  
**Gagnon**, Mme Huguette  
**Langlois**, Mme Therese  
**Messel**, Mme Isabelle  
**White**, Mme Margaret

**Ontario**

**Airth**, Mrs. Margaret  
**Birch**, Mrs. Isabel M.  
**Boulay**, Mrs. Elaine  
**Caughey**, Mrs. Margaret  
**Cheeseman**, Mrs. Jean  
**Collison**, Mrs. Ethel Mary  
**Curtis**, Mrs. Anne  
**de Bastiani**, Mrs. Madeleine  
**Drury**, Mrs. Mary  
**Ferguson**, Mrs. E. Ruth  
**Finlay**, Mrs. Joan  
**Fraser**, Mrs. Betty W.  
**Hall**, Mrs. Dorothy  
**Harding**, Mrs. Joan  
**Holt**, Mrs. Jacqueline Louis  
**Hughes**, Mrs. Crystabel  
**Hymas**, Mrs. Patricia B.  
**Jewett**, Mrs. Lois  
**Machamer**, Mrs. Susan  
**Mahoney**, Mrs. Lenora  
**Marshall**, Mrs. Marjorie  
**MacReedy**, Mrs. Ila  
**McGinn**, Mrs. Elanor L.  
**Milne**, Mrs. Florence  
**Mohide**, Mrs. Jean  
**Morgan**, Mrs. Elfleda J.  
**Newman**, Mrs. Betty  
**Pye**, Mrs. Joyce  
**Reynolds**, Mrs. Maudie  
**Ridout**, Mrs. Shelly  
**Robertson**, Mrs. Reima  
**Schmitt**, Mrs. Eleanor  
**Skewis**, Mrs. Florence E.  
**Slade**, Mrs. Patricia  
**Upham**, Mrs. Kathryn A.  
**Uppal**, Mrs. Anne-Marie  
**White**, Mrs. Elizabeth

**Manitoba**

**Bloy**, Mrs. Colleen  
**Callander**, Mrs. Lois  
**Glassford**, Mrs. Jean  
**Hews**, Mrs. Marjorie  
**Houston**, Mrs. Jackie  
**Koffman**, Mrs. Ida  
**Lebel**, Mrs. Therese  
**MacKay**, Mrs. Shirley  
**Muzylowski**, Mrs. Lesia  
**O'Brien**, Mrs. Phyllis  
**Parres**, Mrs. Billie  
**Perry**, Mrs. Elenore F.  
**Williams**, Mrs. Noella B.

**Saskatchewan**

**Alderman**, Mrs. Jean E.  
**Beck**, Mrs. Marion  
**Forbes**, Mrs. Bonnie  
**Kelly**, Mrs. Verna  
**Little**, Mrs. Dorothy  
**Seiferling**, Mrs. Ellen O.  
**Tamaki**, Mrs. Mabel

**Alberta**

**Murphy**, Mrs. Frances R.

**British Columbia**

**Bowles**, Mrs. Joan M.  
**Bristow**, Mrs. Jan  
**Chabot**, Mrs. Grace  
**Dunn**, Mrs. Mary Elizabeth  
**Eraut**, Mrs. Donna  
**Fyles**, Mrs. Shirley  
**Higgs**, Mrs. Lynda  
**Matthew**, Mrs. Lois  
**Newell**, Mrs. Elvie  
**Sutherland Brown**, Mrs. Barbara

**Government of Canada**

**Crandall**, Mrs. Shelagh  
**Edge**, Mrs. Madeline  
**Goddard**, Mrs. Byrnece  
**Hodgson**, Mrs. Norma  
**Wilkins**, Mrs. J.  
**Jamieson**, Mrs. Kathleen  
**Patterson**, Mrs. Marjory Ann

**Pan-Canadian Organizations**

**Adams**, Mrs. Barbara  
**Baugh**, Mrs. Kathleen  
**Bonus**, Mrs. Brigitte  
**Drolet**, Mrs. Francoise  
**Mahannah**, Mrs. Connie  
**Mannard**, Mrs. Florence  
**McLennan**, Mrs. Lynn  
**Reed**, Mrs. Judith  
**Strangway**, Mrs. Alice  
**Tapp**, Mrs. Mary  
**Thompson**, Mrs. Marie



# **Opening plenary session**

## **Séance plénière d'ouverture**

Remarks by

**The Honourable James A.C. Auld**  
Ontario Minister of Natural Resources

To the opening plenary session

**Conference Theme: Has Canada a future  
as a metal producer in the 1980s?**

As I think you can imagine, I am taking my place as chairman of this conference with mixed feelings. Normally, it's part of the chairman's job, in getting a conference going, to make everyone feel comfortable and at ease. On this occasion, though, it is the other way around. I'm going to ask you to help in making me feel at home here.

But my colleague, Frank Miller, whom you had originally expected to be your host this morning, has assured me he knows you are going to treat me gently because, as you will all probably be aware, I only took over his portfolio as Minister of Natural Resources for this province a little more than three weeks ago, after Frank was appointed as Ontario's new Treasurer.

So, on one hand, I'm conscious that at this very early date I have an excellent opportunity to get a first-hand knowledge of the mining industry's problems and potentials right across Canada. But, on the other hand, I have the task of acting as chairman of a group far more knowledgeable and experienced on the subject under discussion than I could hope to be at this point.

I'm not pleading total ignorance, of course. Frank Miller took all the causes the Ministry of Natural Resources espouses so much to his own heart, and was so eloquent on their behalf when they were being discussed at cabinet, that any of us who claimed complete ignorance would have to be suffering from amnesia or deafness.

And the post I have just left, as Chairman of the Management Board of Cabinet, gave me an additional familiarity. But, as I think all other provincial Mining Ministers will remember from the first few weeks of their own appointments, taking the wheel is something very different from being an interested passenger.

In the past two weeks or so, of course, I have been receiving intensive briefing from my Deputy Minister, Dr. Keith Reynolds, and the senior members of this Ministry's staff, both on the general picture and on the topics likely to come up at this conference. To put it very briefly, I've learned enough to realize that I have a lot more to receive from this conference than I have to offer as my own opinions or as my own considered objectives. But those will come.

In the meantime, though, I want to express my realization of the honour it is, however little I've done so far at this Ministry to earn it, to be acting as chairman of such an important and distinguished conference as this, to express my thanks to all of you who have travelled here from across Canada to attend it, and extend to you the warmest of welcomes from Premier Bill Davis and all the cabinet, with the hope that the time you spend in Toronto is going to be both productive and enjoyable.

And I'm sure that all of you who have previously had the opportunity to meet him will be particularly pleased to know that Frank Miller is taking time off

from the Ontario Treasury to join in the proceedings tomorrow to lead the discussion, as originally planned, on a topic that is close to his heart.

I was as curious, and as intrigued, as anyone by the questioning theme chosen for this year's conference: "Has Canada a future as a metal producer in the 1980s?" It's a grabber, and it's intentionally provocative. As a matter of fact, it has proved provocative enough to have elicited a considerable number of unusually searching briefs from the private sector.

A most encouraging omen is the spirit of openness and co-operation obvious in all those briefs; plenty of suggestions, plenty of criticisms, which is just as it should be, but most of them constructive and none of them expressing hostility.

There is, I believe, an increasing recognition that industry and government have individual parts to play in maintaining or improving the economic strength of a province or territory and of the nation, which won't happen unless both partners fully understand the other's needs and limitations, and certainly won't happen if both partners do not cooperate to the fullest extent.

The theme question of Canada's future as a metal producer in the 1980s was not asked simply to get the answer that the future would be assured only by effective co-operation on both sides. Of course it's essential. Nobody today doubts it. But that's only a part of the answer.

Another need, which is at present a good deal further from fulfillment, is a public realization of the enormously important part the mining industry has played, is still playing, and must continue to play, in providing the standard of living and the range of social services all citizens enjoy.

In these days, when there's a noticeable tendency for many of the younger generation and certain interest groups to suppose Canadian mining activities could be decreased, and effortlessly replaced by something daintier without substantially affecting our living standards, it's time to provide a reminder. The reminder is that the role of the Canadian mineral sector as a contributor to the national product is far greater than that of most other countries in its potential for earning the foreign currencies necessary to pay for our imports, and that its value to Canada as an export factor is, and always has been, vastly greater than the human and land resources it has to draw upon for the purpose.

But I have already come to see that even that is not the complete answer as to whether Canada has a future as a metal producer in the 1980s. We also have to realize that the Canadian mining industry is now facing global problems, in particular, the nature of the competition likely to be increasingly felt from underdeveloped nations, not only outside our ability to control but in some cases outside our present experience to combat.

I was relieved to learn, after my Ministry's experts had made this situation rather depressingly clear to

me, that they could express a cautious belief that, despite those facts, Canada can have a future as a metal producer in the 1980s. But they left me in no doubt whatever that, to their minds at least, that future would demand and merit more support and greater recognition of our mining industry's importance than ever before.

The importance of these annual conferences, of course, is that they provide the opportunity for each of us to assess how closely we all agree, or disagree, on issues such as this. They allow us to identify specifically the goals we must aim for collectively to improve the Canadian mining industry's prospects, and to debate the most effective courses to be followed in order to reach those goals.

I have been given a brief list of some of the subjects this conference may decide to choose to discuss along such lines, but this need not be taken as more than a starting point to get the proceedings underway. As I've said, there are limits to what can be accomplished at the provincial level, just as we recognize the limits to what the federal authority can (or maybe I ought to say "should") control. There are, though, no limits set to the range of our discussions even if, in some instances, problems can't be usefully pursued much further at this point beyond identifying their existence and their cause.

On the list I have been given, and I'd ask you to note that I'm not going to name them in any special order of priority, the first topic is the establishment of a common provincial front in relation to Bill C-14: "The Nuclear Control and Administration Act" with its implications for uranium mining.

Second, action towards uniform legislation providing for mandatory filing of mineral exploration data.

Third comes the question to which, I'm sure, all provinces would equally like to find an answer. That is, how a ceiling could be set on the total load of taxes and other government mandated costs imposed on any Canadian mining company.

Fourth, the finding of ways to ease constraints on junior mine financing.

Fifth, the provision of incentives to stimulate personal investment in mining.

Sixth, the need to develop public confidence in mining.

And seventh, the securing of greater realism in the environmental debate.

Let me repeat that there's no particular significance to the order in which I named those possible topics. As you will have recognized, some are narrow in their purpose, and some are broad.

In general, I want to refrain from enlarging on any of them at this point; that's the function of this conference. This is, though, the appropriate time to add a couple of relevant and important footnotes.

I don't think I will encounter any very vigorous disagreement in suggesting that legislation affecting the Canadian mining industry has been characterized by a rather unsophisticated hit-or-miss approach. At the beginning of the century an English funny paper published a famous cartoon in which one grubby child was shown doubtfully examining a grey fluffy object he had found in the pocket of his knickerbockers, and admitting to his pal that he wasn't certain whether it was a lollipop or a dead bumblebee. And the other urchin advanced the practical suggestion, "Suck it and see".

I believe many of you have a suspicion that the same principle is still being applied today in some aspects of the legislative process, and usually for

the regrettable reason that no more scientific basis exists for determining the outcome. This seems to have been particularly true for the mining industry, which has had to swallow many bumblebees in its time.

This was a state of affairs that the Ontario Ministry of Natural Resources, as many of you will know, has been attempting to rectify in recent years by undertaking and sponsoring a planned series of authoritative and advanced studies, applying the tools of sophisticated modern technology to the investigation of practical issues necessary for a favourable investment climate.

Our Ministry has arranged a display of its publications to date in this series. You may have noticed it already, the display is next to the conference registration desk in the main mezzanine. Not being able to take any credit for their preparation at least gives me the advantage of being able to say quite unashamedly that I think they provide, in part at least, a firm foundation for new and enlightened policies in this field, and that they will prove invaluable to government, industry and investment analysts everywhere. I commend them to you.

Obviously, these publications represent advanced reading intended primarily for economists with specialized academic training few of us can claim. Two such studies, dealing with the financing of junior mining companies, are nevertheless of such importance for all of us to understand, at least in broad outline, that we have just published an abridged layman's digest, combining the salient points of both studies, which we are making available at this conference. It's titled "The Decline of Small Mineral Enterprises in Ontario" and copies are available at the same display.

I can't give it any higher testimonial than to say I was able to read it, understand it, and learn from it.

Perhaps even more important though, is number 5, in the Mineral Policy Background papers commissioned and undertaken by the Mineral Resources Branch of our ministry. Its title is "Investment Effects on the Mineral Industry of Tax and Environmental Policy Changes", and has the sub-title, "A Simulation Model".

It is, I am told, the first such study which attempts, and succeeds in providing a basis for measuring in advance the effect of any proposed policy changes either in respect of taxes or environmental regulations applying to the mineral industry, and the simulation model has been designed with a flexibility that makes it adaptable to variable circumstances.

My staff have recently mailed out more than 600 copies of this report to interested parties throughout Canada, the United States and elsewhere. Most of you should have received your copies by now, unless there have been undue postal delays. If you haven't, please leave your order with the staff at the publications display.

We offer this report as our contribution to the mining industry with the hope it will herald the end of a long era of having to "Suck it and see" whether they have a lollipop or a dead bumblebee!

And now, before I introduce Mr. H. Ronald Fraser, who is going to deliver the first keynote address, it only remains for me to thank you sincerely for the warmth and friendliness with which I have already been greeted by all of you I have already met, express my pleasure at the learning experience this conference will give me, and the hope you will all find it equally rewarding.

## Keynote Address

by H. Ronald Fraser, Chairman,  
Hudson Bay Mining and Smelting Co. Ltd.

Honourable Ministers, Ladies and Gentlemen,

I very much appreciate the privilege of being able to address you at this Mine Ministers Conference and to have this opportunity to participate in a dialogue between government and industry which I am convinced is essential to the development of mutual understanding and the establishment of sufficient identity of interests and objectives to ensure that Canada in the eighties will resume the proud place among the mineral industries of the world which it enjoyed in the middle years of this century.

The question I have been asked to respond to, "Has Canada a Future as a Metal Producer in the 1980's?", might, perhaps, be somewhat rephrased. Of course there is a future for the mining industry in Canada. The real question is "What sort of future will this be?" And the answer to that question, gentlemen, lies in considerable measure in your hands.

I say this because I believe that the health of the mining industry generally is more sensitive to government attitudes than almost any other industry and the Canadian experience amply demonstrates this. The fall in Canada's mining industry from being the cynosure of mining industries everywhere in the fifties to very nearly a basket case in the seventies is something for which Ottawa and various provincial capitals can claim undisputed credit, just as predecessor governments can claim the credit for having put Canadian mining where it was in the first place.

These are not issues on which I would presume to make value judgments. In a democracy you are on the hotseats and if you feel with the Carter Commission that a dollar is a dollar no matter where it comes from you also presumably accept the corollary "no matter what its worth".

We accept that, in a complex society, you have to establish your priorities and that in your overview of a situation your priorities will not always be ours and that some of your decisions will hurt. You, obviously, accept that when we are hurt, we yell. I was about to say that earplugs must be standard issue for politicians, but of course I know that this is not true. At least in one sector, the translation of yells into voices at the polls, a politician's ear must be one of the most delicate acoustic instruments known to man. I am not sufficiently cynical to believe that this is where the perceptual functions of that particular organ end. It is certainly important to us, and I believe that it should be to you, to know when we yell, whether it is a cry of petulance, annoyance, outrage or mortal terror, it is for this reason we should value this opportunity to give you our insights into some of the factors which will be crucial in determining the shape of the Canadian mining industry in the eighties and beyond.

It is certainly not too soon to look that far into the future, because with the ever-lengthening lead

times for mining projects, anything that is not already a gleam in somebody's eye is unlikely to see the light of day before the end of the next decade. Even if the gleam is already there, the decisions that will give it flesh are being taken now and they are being taken in the light of the experience of the recent past and our interpretation of the evolution of the future in a variety of areas in many of which government policy will probably be a determining factor.

How can we help you focus on these areas which will be decisive to the development of the next decade?

We can quote statistics. You already have them.

We can quote the axioms we have learned about mining development. I haven't looked up the definition of the word axiom in the dictionary but I think it would probably run something like "a fact that is so self-evident it does not require to be proved". That explains why what are called axioms today are often called myths tomorrow.

We could paint for you from the rich palette of our opinions and experience what we consider to be the ideal picture of a government mineral policy. If you talk to enough of us you will have a gallery ranging all the way from Pre-Raphaelite to Op-Art.

This diversity of views is proper and natural. It is the essence of democracy in the economic sphere, as I understand it, that everyone is free, not only to hold his own opinions, but also to put his money where his mouth is so that it is possible to be in a minority, to be right and to be rewarded for being right. This, of course, contrasts with the practice in the political sphere where it is possible, too, to hold individual views which may be in the minority and which may also be right. The difference is that in the political sector one is compelled to put one's money where the majority mouth is and not only to go unrewarded for being right, but to be penalized for the wrongness of the majority.

I have no desire to further limit economic freedom of choice by persuading you to a set of opinions which should be the basis of a policy to be imposed on the industry as a whole. I believe that the function of government is to foster as far as possible the rich variety of economic enterprise, to avoid throwing up roadblocks to development and to be conscious of the areas where government policy might have a significant impact on the ground rules under which the industry operates.

This last question appears to be as good a starting point as any for the sort of dialogue we have been invited to have with you. I would like to examine a number of areas where the industry perceives its problems to be attributable, at least in part, to the action or inaction of government.

The first question I would like to touch on is not so much a problem as a concept which might lead to policy commitments that would create problems in the future. I refer to the concept of the "conservation society". This title fills me with grave misgivings. It

has all the hallmarks of being the name of next year's bandwagon. It is sufficiently imprecise to mean what anyone wants it to mean, it comes with the comfortable styling of a whole range of earlier models: environmentalism, consumerism and so forth. It has overtones of righteousness in whose name any excesses are acceptable. If suitably launched, and there seems to have been a number of launching parties, it will roll as is the nature of bandwagons with fanfare and hoopla and it will be used by all kinds of people who have a nostrum to sell.

I cannot help but fear that the mining industry will again be a favourite target for harassment. The particular danger of bandwagons is that governments, which are not averse to launching them, cannot control them. They don't want to be tagged as anti-bandwagon bad guys and so get dragged into supporting all kinds of measures they would not ordinarily have considered. While I feel very concerned at the thought of a conserver society bandwagon, my objection is to the emotional and sentimental appeal. The world is full of Thoreaus searching in their Walden Pond with all modern conveniences.

The issue at stake goes to the very foundations of our social and economic fabric. What sort of society do we want to be? Given the objective, it is not difficult for government with its immense resources to bring about the changes necessary to achieve it.

It is not so long ago that Canada set itself the economic goal of not being hewers of wood and drawers of water and the social goal of high minimum standards not only of income but of all manner of social facilities. This has been largely achieved. We are certainly hewing much less wood and drawing much less water, which I take to be a pseudonym for minerals, than we might have done.

The social goal has required that those not engaged in hewing wood and drawing water should be remunerated and serviced at least as well as if they were, which has meant that the remaining hewers and drawers have had to be content with much less reward than they might have expected so that they don't have the funds to invest to create alternative opportunities. I don't need to belabour the point. Ottawa is already sending out signals that it has been recognized.

The conserver society concept brings a new slant to the same issue. We were told that hewing wood was not proper, that we should perform such menial tasks for others to do clever things with the wood and water.

The conserver society concept urges us to hold back on the hewing and drawing because, if we don't, there will be nothing left for our children's children.

The conserver society concept is tied in with the environmental question so as to link the conservation of resources with the conservation of the environment and endow them both with ethical overtones and the morally uplifting values of a simpler, less wasteful way of life.

I will return to the environmental aspects of this philosophy later and limit myself for the moment to the question of conserving natural resources.

The traditional attitude of the industry has been to develop ore deposits which offered the prospect of an economic return within the framework of market projections. This is still the attitude of the mining industry, perhaps a little more cautious because of the escalation of capital and operating costs which

have undermined feasibility calculations in many instances. Also because of uncertainty of markets which have defied the laws of supply and demand, largely because of the persistence of uneconomic production in less-developed countries where the industries are controlled by governments with non-economic motivation and the apparently limitless backing of international finance.

On a more modest scale, the Canadian government has done its share of helping sub-economic projects, though this has normally been done by giving the Canadian industry a head start in the form of a three-year tax-free period, or other fiscal incentives which an entrepreneur could figure into his feasibility calculations so that an otherwise uneconomic project would become viable. By and large, these concessions were philosophically justified on the grounds of offsetting Canada's handicaps of distances and climate, and, whether intentionally or not, recognized the character of much of Canada's geology enabling relatively rich but small deposits to be beneficiated. The significant aspect of the Canadian system is that, given the more favourable ground rules, the Canadian entrepreneur was still obliged to carry the risks of the venture.

The Carter Commission spelled the beginning of the end for this system. The idea of a dollar is a dollar wherever it comes from and that collecting taxes should not be confused with their application, ignores the fundamental political reality that it is a lot easier not to take something from someone than to take it away and then justify giving it back when a hundred hands are outstretched for it and a hundred throats are shouting "Gimme".

Of course, history has its ironies and it is interesting to see that some of the billions of dollars that might have kept the Canadian industry healthy and growing are now to go to foreign countries to develop projects far more uneconomic than many now languishing in Canada. This comes at a time when countries such as these are pushing out unneeded metal to depress our markets, often highgrading and gutting deposits in a manner which even the most ruggedly independent miner would recognize as anti-conserver.

The "conserver society", as I understand it, goes further. Not only would it seek to depress demand by switching social attitudes from an economy of waste to an economy of efficient use and recycling, but it would also seek to limit the development of new projects so as not to be profligate with our resources. How this should be done—by raising the cut-off grade of ore through higher taxation, by a dirigiste control of new ventures through higher taxation, by a dirigiste control of new ventures through licensing arrangements—is not clear.

Either way, it presumably means that the administrators of such a society would claim, not only to know what is best for us now, but also the knowledge and ability to adjudicate on the needs of future generations in whatever the unknown circumstances of their existence may be.

It seems to me that the overweening vanity of anyone who would assume this role is matched only by the lack of confidence in human ingenuity. Recorded history shows that posterity has been well able to take care of itself. Whenever man, dazzled by his achievements believes that he has reached the limits of growth he is usually on the threshold of new expansion. I think we are going to hear a lot more of the conserver society in the years

ahead and I would strongly urge that this concept be viewed with great care, especially insofar as it applies to imposing artificial limits on the development of resources out of consideration for supposed future needs.

I might mention in passing that a very large proportion of metal production, most of the iron, gold, lead, copper and silver, at least in their metallurgical as opposed to chemical uses is recycled as scrap and may continue in service for hundreds of years.

The next problem area I would like to touch on is the raw material of the mining industry—its ore reserves. The first thing to be done with ore reserves is to find them, and this is the province of the prospector.

Now, one of the most striking features of the great mining revolution of the sixties was the virtual destruction of the Canadian prospecting industry as it had existed and thrived in the fifties. Up to that time Canada had perhaps the most astute and most successful body of independent prospectors in the world. They had been largely responsible for giving the Canadian mining industry its particular character of a large number of quite small mines and thereby developing and exploiting Canada's typical mineral resource structure.

The destruction of the Canadian prospector stemmed from a number of changes.

One was a change in tax structures which, in effect, raised the cut-off grade for feasible mining ventures and made Canada's typical small mining operation, the bread and butter of the prospecting industry, much less viable. The other factor was the removal of incentives.

Prospecting has always been a high risk game. The incentive has always been the high reward of the bonanza that every prospector dreams of. Capital gains tax effectively removed the gilt from the gingerbread.

The other aspect was the tightening up of security laws. If the real bonanza was rare indeed, many prospectors eked out their existence by marketing their dreams and hopes.

It is difficult to argue against the need for fuller disclosure and shareholder protection, but on the other hand any investor who saw the penny mining stock market as other than Canada's answer to Las Vegas was naive indeed.

I think there is no doubt that this change has meant that many ore deposits have gone undiscovered, that it is in part responsible for the depressing fact that only one new mine was developed in all Canada last year.

But there is no use crying over spilt milk and I am not suggesting that we put the clock back. To some extent the Canadian prospecting pattern of the fifties and early sixties was an anachronism, though a profitable one. The shift in emphasis in prospecting has long been away from the bearded man with a pick and shovel and a burro to the bearded man in a white coat with a scintillometer and an aeroplane.

The prospecting boom of the fifties and sixties was not confined to the rugged individualist. It was manifest in all branches of the industry and Canada took an early lead in the development of geophysical and geochemical techniques and here again much of the work was spearheaded by small independents though they obviously relied on the big companies for most of their business.

Nearly all the orebodies so far discovered have been traced from outcrops or ore on the surface. Only recently have geophysical and geochemical

techniques enabled us to locate orebodies concealed beneath the surface and so far only at quite shallow depths. Clearly the future of prospecting will be in being able to peer more deeply, to distinguish the nature of anomalies and to pinpoint their location.

As I have said Canada has been at the forefront of this development. With the slowdown in mining activity over the past decade many of the leaders in this field have been looking beyond our borders for fresh action. I believe this would be a fruitful area of study to develop appropriate inducements for Canadians to continue to lead in the development of these techniques. Of these inducements the greatest is, without doubt, the existence of a vigorous and dynamic prospecting industry at home base.

The other aspect of exploration activity which I would like to touch on is the question of tenure of mineral rights. In various quarters there has been quite considerable criticism of large companies owning large tracts of unexploited mineral bearing lands and the suggestion that they should be compelled, within a relatively limited period, to proceed with the development of these deposits or return them to the public domain. On the face of it this is a persuasive argument which might easily raise a great deal of popular support. What it ignores is the whole economics of exploration in the mining industry.

Industry statistics over the last twenty years indicate that for every mine brought to production, regardless of size, \$20 million to \$30 million is spent on exploration—probably much more in today's mini-dollars. The same statistics also indicate that only three or four of every thousand prospects examined by a mining company will ultimately result in a mine. On these figures it would seem that prospecting risks are unacceptable.

What makes prospecting feasible under the present system is that for every viable deposit discovered several marginal or sub-marginal ones are found. These go into the company's inventory of properties in the hope that someday they will become viable by reason of changes in markets, improved technology, improved transportation, or what have you. This pattern is integral to the whole system.

If exploration were to be conducted on the basis that ore production would have to be developed within a certain period, some other economic basis would have to evolve, such as government subsidies or state assumption of the whole exploration process.

Furthermore, the concept that a deposit has to be developed just because it is there—which has had much support among the developing nations—has been no small contributor to the market chaos which has marked the last few years.

I will turn now to the most important area of capital formation. This has always been a major problem for the mining industry, due to the many uncertainties of our business, and especially because of the strongly cyclical markets for most major metals. In fact, very few mining ventures since the war have been financed by public flotations and most of those have had, in one way or another, the backing of an established mining house.

This applies not only to Canada but to all the major mining countries in the world. The traditional pattern has been for the original entrepreneur to seek at some stage the technical and financial backing of a

major mining group. This is why you can count the number of major mining groups in the non-ferrous metals industry worldwide on the fingers of two, or at any rate, three hands.

In fact, I cannot call to mind a single grass-roots venture in the private sector which has established itself as a substantial force in the world mining industry during the quarter century that I have been involved in this business. I don't believe that this is due to the greed or aggressiveness of the established mining houses. It simply reflects the fact that, with the size of mining projects and the risks of the business, the big mining houses are the only game in town. And, in by far the majority of cases that I am aware of, the initiative for acquisitions, mergers or takeovers has come from the junior party.

Even the big mining houses have not found it easy to raise new money from the public. Most of the growth has been financed by ploughing back profit from established operations. Most mining houses, conscious of the risks of the business, were very chary about excessive borrowing and took care not to extend themselves beyond what they could cope with if things came to the worst.

All this has changed. The mining industry has been hit by what Mr. Nixon would probably have called a triple whammy: the confiscatory taxation of profits in the good years on which the industry has relied for capital building, the acceleration of capital and operating costs and a tide of costly and frustrating regulatory provisions which has borne most heavily on this industry. This has put the possibility of raising capital from the public further out of reach than ever. With the added burden of three years of disastrous markets for most metal products, the market valuation of most mining stocks for that period has been away below book value, not to mention the replacement cost at which new ventures would have to be financed.

In these straits, the mining industry has only kept going by turning to the issue of long-term obligations, so that in ten years the long-term debt of 10 of the largest North American mining companies has increased tenfold from not more than 300 million to over three billion. In the continuing state of poor markets and political uncertainty, even the largest mining houses like Anaconda and Amax have had to turn to the relatively affluent oil companies to sustain their liquidity. The dimensions of this problem are illustrated by a paper presented to the recent Commonwealth Mining Congress in Hong Kong which estimated the world mining industry's capital needs over the next 10 years at \$11 billion per annum against an industry cash flow for the same period of \$4.3 billion, a shortfall of \$6.7 billion per annum.

There is no single answer to this problem. It is, in fact, the culmination of a whole series of forces: lack of fluidity in stock markets due to investors being locked in by capital gains tax, the unnecessary burdens of excessive regulation, the devastation of recent tax policies and the fear that they will be resumed when good times return, and especially the multiplier effect of inflation and the well-known hazards of the industry. Confidence in the industry can only be restored by tackling each of these factors. I will refer in more detail to some of them.

I would like to return for a moment to the environmental issue which has had an enormous impact on the mining industry. I think the issue is very much social and philosophical, almost a metaphysical or religious one. Perhaps you will forgive me for dwelling later on these non-technical and

non-economic aspects, because I think it is precisely these that impact most heavily on the political reaction to the technical and economic problems.

From where we sit in the industry, there are a number of relatively simple issues. The process of mining ores and extracting metals is a metamorphic one. It involves moving vast quantities of rock, it requires burning, smelting, dissolving and depositing of residues. It is, in fact, an extension and an ordering of the very forces and processes used by nature itself. Just as the farmer selects and develops certain strains of plants and animals and eradicates and destroys useless species by the processes of breeding and cultivation, so the miner and the metallurgist select and accelerate the same processes of rock movement and chemical reaction by heat and water by which nature has formed its orebodies to carry the progression to the ultimate refinement of the metals or minerals that man finds useful to his current needs.

These processes, whether used by man or nature, tend to be violent, destructive and disruptive. Nature is not a particularly tidy worker. The world is littered with great heaps of tumbled rock from the Himalayas to the Andes. Nature has left vast smouldering slag heaps in Iceland, Hawaii and all around the fiery rim of the Pacific. She has left great unfulfilled ditches of barren earth in all the eroded canyons of the southwestern United States, great deserts of unconsolidated sand in the Sahara, soil stripped to the bedrock, all over the pre-Cambrian shield. She has sprinkled the whole earth for years with particulate matter from the Krakatoa eruption.

Man, generally, has been more tidy than nature, and where it has not cost him too much effort or money, he has tended to put things back as he found them, or at least pile his garbage neatly. But even so he has faced increasing criticism. It is another irony that the severest critics of the miner's microcosms of nature have been precisely those who band themselves into Sierra Clubs and the like to gaze in awe and admiration at nature doing precisely the same thing on an infinitely grander and more careless scale.

The mining industry has responded to this criticism by becoming much more careful and responsible in controlling potentially noxious emissions. Some of this can be accomplished economically in certain circumstances. Sulphur dioxide can be converted to sulphuric acid and sold—if there is a market. Slag can be cast into paving stones or building aggregates, again, if there is a market. Strip-mined fields can be restored and sold as agricultural land if the topsoil was suitable in the first place, and so on.

Other means of conserving nature's environment (and in view of some of the examples I mentioned just now I am not always sure what that means) will cost money without bringing any economic return to the operator. If he is to spend that money, there must be some other return in the form of some social or aesthetic benefit to somebody. Since that benefit has a cost, it has to be paid for. By whom? By the mining company? Why?

Well, if the mining company has deprived somebody of a benefit or exposed them to a hazard, it owes them this. True enough. But whether or not the mining company is the direct payer, ultimately these costs have to be met by society, either by accepting higher costs for the product they require or by doing without it. If society is paying for the cost, it has the right to be assured that the benefit it receives has a

value commensurate with the cost. If a mine digs an open pit and eventually works it out, it has created a hazard. It has a minimum responsibility to guard the pit to protect the unwary or animals from falling into it. It might do this by putting up and maintaining some kind of fence. This would have a certain cost. It could also do it by filling in the pit. This would have a totally different cost. The miner would argue that the fence is all the protection needed. It might be argued that the pit is unsightly and should be filled in and landscaped anyway. If the pit is in a remote mining region, is the benefit which this might confer on the passing trapper or overflying stratocruiser one that the people of Canada should be prepared to pay for? It is this type of wasteful overkill that the industry is concerned about.

I said a moment ago that environmentalism had a religious character. I would like to explain this. For millenia, man has had to battle with the forces of nature which shaped his world. Fire and flood, the succession of the ice ages and the grinding of the earth's crust under the shifting of the tectonic plates were the forces against which man had to call upon all the resources of his intelligence and his technology to survive.

Suddenly, in the course of a single generation, man finds himself equipped with new instruments: atomic energy, a vast proliferation of chemical products of unmeasured power, a potential for shaping or interfering with his own genetic structure— instruments as capable of altering, shaping or destroying his environment and himself as those against which he has had to struggle throughout his existence.

Suddenly, man finds himself charged with the awesome responsibility of using and controlling these forces. We have eaten of the fruit of the tree of knowledge and we are as Gods.

Unfortunately, we have had no preparation for the God role and the hazards of training on the job are obvious. In this predicament, man has traditionally found himself a priesthood to take the responsibilities off his shoulders, a priesthood whose arcane knowledge qualifies them for the terrible role of ultimate decision. The trouble is that priesthoods—which are always surprisingly available for the job—tend to spread themselves. They get into things like debating how many angels can dance on the point of a needle, or how many motes of dust may dance within a cubic centimetre. The civil authorities have always tended to have trouble with the priesthoods because, by their nature, the priests have been invested with respect and authority by those whose moral burdens they have assumed. The priests of the ecology, like Moses of old, are provided with a brother who shall speak to Pharaoh and the brother's name is Media.

The result is that we see campaigns every day to ban something or other, often on the most tenuous evidence, or campaigns to save something or other at enormous cost in the name of preserving nature's heritage. So, in the name of Nature that buried the dinosaur, froze the mastodon and destroyed the sabre-tooth tiger, the people of Florida are footing the bill to the tune of billions of dollars to save a small fish called the snail darter.

We understand the pressures that you can be subjected to by campaigns of this sort. But we believe it is important that people should understand the notion of cost: benefit and that ultimately all costs are borne by society, which is you and me.

To continue the religious analogy for a moment, it

is a deeply-ingrained human instinct to transfer guilt in moments of crisis by persecuting Christians, Jews, heretics, witches or whatever other group is handy and not in a position to hit back. The mining industry seems cast for this role on environmental questions.

After the Ontario government extended Inco's permit to use its present pollution control system, I heard a television commentator state that in 21 of 24 lakes around Sudbury there are no longer any fish. His tone and expression clearly conveyed that this was the ultimate condemnation of both Inco and the Government of Ontario. No doubt most of his audience accepted this.

Had he said that the salmon fishing in the Don and the Humber was ruined by urban development and the duck shooting at Ontario Place was a write-off, everybody would have looked at him as though he was crazy. Which shows that people can grasp the concept of cost: benefit when it is near enough to home.

To be more specific, the Department of the Environment has laid down certain principles regarding pollution control. One of these is that standards should be uniform throughout the country. The professed intention is to avoid pollution slums. With the history of the Ruhr and the English Midlands behind us, the end is understandable, but the means ignores the concept of cost-benefit as much as that of common sense.

It is inconceivable that the same standards should be necessary for a single operation in a remote wilderness area as in a heavily-populated and heavily-industrialized zone. It is obviously easier, administratively, to have a single rule-of-thumb that can be applied, regardless of the needs of the situation, or the consequences, since this dispenses with the exercise of judgment. But the whole basis of our economic system postulates the use of judgment.

Another principle enunciated by the Department is that standards should be based on the best economically viable techniques. The technical experts of the department tend to base their recommendations on the best available techniques, regardless of economics. Their argument that they are not qualified to express an economic view and that this is a political decision, puts their administration in the politically vulnerable position of appearing to overrule expert opinion to favour the greedy mining companies.

The mining industry also suffers from the hobby horse riders promoting the theory that some element or other is a threat to health. Lack of adequate evidence of hazard is brushed aside with the argument that, if there is even a suggestion of risk, government dare not take the chance of permitting exposure.

The mining industry recognizes its responsibilities and is prepared to make available its resources of technical and economic expertise to help government to set practical and realistic standards and to devise means of meeting them with the minimum of social and economic disruption. I believe this whole field requires careful re-appraisal.

*In the last resort, most of the problem areas in the mining industry ultimately revolve around the question of taxation.* I have already taken up a great deal of your time and I know that the Mining Association will cover this matter in some detail, so I will limit my comments to emphasizing the pervasive influence

of tax problems on mining decisions and to touch very briefly on some of the problems peculiar to our industry.

First, *the mining industry has been made a battleground in a fiscal jurisdictional dispute between Ottawa and the provinces* conducted on the basis of each side saying to the other: "If you don't back-off the mining industry will be killed". This technique, patented by King Solomon, worked in his case on its appeal to mother love. In Canada, it left the industry with an acute feeling of being motherless.

Second, *the mining industry is highly cyclical and fiscal policies must recognize this pattern*. The tax assault on mining profits in the early seventies has to a great extent crippled the industry financially.

Then it must be recognized that *the very long lead time between initiating an exploration program and initiating production requires stability of policy* to encourage entrepreneurs to make heavy front end investments in the reasonable security that their fiscal assumptions will not be turned upside down half way through the project. Mining is not an industry that responds to continual fiscal fine-tuning.

*The fundamental importance of exploration must be recognized and encouraged to maintain the health and vigour of the industry.*

*The physically-remote and socially-isolated location of most mining enterprises should also be recognized, together with the industry's contribu-*

*tion in extending the effective frontiers of Canada more than 150 kilometers north of the 49th parallel.* Not only might the industry hope to receive fiscal recognition of this situation, but even more important it needs encouragement for its labour force. Not only must the industry compete with the inducements that government offers to enjoy idleness in southern comfort, but it is faced with a whittling down of such inducements as its labour force already enjoys. It is hard to imagine anything more counter-productive to mining development than what I understand was the intention to tax the free room and board which the industry provides for its employees in the field.

These are some of the rough spots that we see in the interface between our industry and government. As any engineer knows, rough spots will eventually be smoothed down by abrasion, but this process will generate heat and stress, which in a complex mechanism may eventually bring the machine to a halt, or even distort it to the point of having to discard it.

The alternative is lubrication and I believe that it is at conferences like this that the problems can be identified and in the subsequent joint study groups, task forces and the like that the lubricants can be selected and applied. I think the problems of recent years have alerted both governments and the industry to the urgent need for such co-operation. Through the Mining Association and other industry groups, a movement in the direction of finding a common approach to the understanding and solution of problems is already under way. I think it is of the utmost importance that the leaders of government and industry should put their weight behind this movement, so that there will still be a mining industry in Canada in the eighties and one that will develop its natural resources and the undoubtedly talents of Canadians in this field and so benefit the entire community.

Thank you.

Honourable Ministers, Ladies and Gentlemen:

We in the mining industry, being accustomed to geological time, are perhaps more acutely aware than most that time is continuous. Because of his short life span, man seeks to make time comprehensible and so divides it into short, manageable segments—years, decades or centuries.

When approaching the end of one of our blocks of time, we feel an urge to prophesy and to resolve to do better in the future.

At the end of each year, we make innumerable New Year's resolutions and economic forecasts. Toward the end of each decade, we produce a veritable flood of predictions about what will transpire in the next 10 years.

The seers of old looked for portents in phenomena, both celestial and intestinal. Modern prophets have available a variety of sophisticated technologies, from the 50-year Kondratieff wave to macro-computer models of the popular indicators, but still the most frequently used method is an extrapolation of the immediate past.

These traditional exercises in prophecy are relatively harmless, so long as we don't take ourselves too seriously. Kenneth Boulding, an eminent economist, warned of the dangers of extrapolations of past trends when he wrote, in part: "...While there is a great deal to be said for making projections according to the most sophisticated principles possible, there is also a great deal to be said for not believing them."

In the late 1960's, the influential magazine *Fortune*, foresaw the 1970's as a violent decade, full of social chaos, with the possibility of the United States becoming an armed camp. No doubt these forecasts were influenced by the racial violence, campus revolts, anti-Vietnam riots and the proliferation of terrorist groups which marred the late 1960's. *Fortune* overlooked the fact that socially turbulent periods are always times of transition.

As we all now know, the dominant reality of the 1970's was the energy crisis, and destructive waves of inflation and recession.

Remember the Club of Rome, whose pundits predicted the imminent depletion of the world's resources? A temporary shortage had led to higher commodity prices and a serious misconception of the long-term available supply of minerals. A cry rose around the world to hoard resources for future generations. With all the scare talk of shortages and the finite resources of "spaceship earth", we forgot completely Boulding's injunction to be skeptical of forecasts. Not surprisingly, at least to the industry, just a few years after the Club of Rome's dire predictions, the world finds itself with a surfeit of metallic minerals in reserve!

We shall, only with determination, convince the people of our country that they have got to work. They have no conception of the meaning of national wealth, they have been taught that it is the profit of corporations rather than the sum total

of individual effort. This teaching will come better from you than from us—since we, unfortunately, are suspect.

In sharp contrast to the prevailing Canadian view, a clause in Japan's constitution declares "all people shall have the right and obligation to work". I need not comment on the relative performance of the two economies!

To alter our attitude to work and its reward, and thereby lift Canadian productivity levels, we must have persuasive and dynamic leadership. Although industry spokesmen can and will explain our country's needs and difficulties, it is from our elected and appointed representatives the message must emanate for they have the audience and get the bulk of the coverage by the communications systems. I believe Canadians are looking for a challenge and you will find them responsive.

Consider the damage wrought in taking the Club of Rome's forecasts seriously. People became frightened and—as always happens—sought to identify the enemy. The mining industry, which was then experiencing a temporary boom, became a popular target. We were accused of having no regard for the public's concerns—their obsessions—for conservation of resources. Nor was the industry defended by those in power. Governments imposed on the mining industry even more burdensome taxes, royalties and regulations, which served only to confirm the public's perception of us as unconscionable exploiters. In a vicious circle, erroneous forecasts, popular fear and government actions, all reinforcing one another, for mining in Canada made the 1970's—the disaster decade of the century.

When speaking of forecasts, we cannot omit that famous prediction made over 70 years ago: "the 20th century belongs to Canada". To my mind, this was a prediction that Canada would flourish—not only economically, but socially and culturally as well, if we would but exploit our natural resources and human potential wisely. Unfortunately, many people have taken this prediction for a statement of Canada's fate, believing it to imply that all good things will come to pass, without undue effort on their part. This attitude has been particularly rife over the last 10 years, during which time this nation's citizens have been led to believe, by intellectual pied-pipers, that our resources will make us rich, and that the principal task of government is to redistribute this inevitable wealth according to some befuddled idea of social desirability.

Do we really believe that our nation is a giant Loto-Canada, where we are all ticket holders and every ticket is fated to win a million dollars? I hope most of us do not! Clearly, however, many Canadians have come to believe that they can be less than diligent and that a beneficent government can, and will, provide.

The past utterances of our public people are responsible for many of the widely-held, but

erroneous beliefs, which now must be corrected. Pressure groups, funded in part by our tax dollars, are the creation of government. The proliferation of these special interest groups, many of which represent no real constituency, not only impede new development but, worse, instill in the minds of Canadians, apprehension and distrust of all our institutions.

Under a system of responsible government, it is clearly the duty of those whom their fellow citizens elect, to really set the record straight, and call for a rethinking of our priorities. Our society can only thrive if the productive sectors are encouraged and affirmed.

To change our people's attitude toward work and its reward, government must alter the nature of its involvement in the economy. Too many Canadians are currently engaged in activities which do not result in output to be sold. I am not speaking of the services, as contrasted with the goods-producing sectors. On the contrary, I am referring to the large numbers in both of these broad categories, who have jobs solely to meet the ever-growing requirements of government, and who otherwise, would be released for productive work.

We must be ever-mindful that the measure of the wealth of a country is not the GNP as now constructed, but only the value of the goods produced and the output to be sold.

Would not the Treasury Board, now endeavouring to reduce federal government spending, be aiding and instructing the country, if the planned program of spending cuts were directed at those areas where there is "no output to be sold", nor wealth to be created?

The entire Canadian economy would benefit, revenues of governments would increase and, for Canadians, it would mark the beginning of a renewed sense of purpose and pride in our country.

Although I have been asked to comment on Canada's role as a metal producer in the 1980's, I will make no forecasts, since they are not for believing. I prefer to talk about resolve. I hope you will resolve before the end of this Conference, that the Canadian mining industry shall flourish, because our future will be determined by how our industry is viewed here at home. I hope you will also take pride in our achievements to date, for our energy and expertise are recognized worldwide.

Cyclical fluctuations in world demand for metallic minerals will not cause the industry to fail to realize its full potential in the 1980's. Nor will a failure of mining be due to a lack of basic resources to support enhanced production, as both you and your departments' technical staff are aware. Nor will a failure be due to lack of either initiative or inventiveness of those engaged in mineral production—even though this same initiative may surface elsewhere in the world, in response to demand for its technological competence. Nor will it be due to any absolute lack of capital—although, like technology, capital might find better employment elsewhere. No! Any failure in the 1980's will be due almost entirely to the lack of an appropriate context for the restoration of a dynamic mineral sector.

Our future, whether we are speaking of the next decade or of the balance of the 20th century, is not a future of fate. Rather, it is a future of determination. I use the word "determination" in several senses: to determine our future by determining objectives and pursuing them with determination. Canada's future

as a metal producer will be decided by the objectives chosen for the industry and how reasonably they are pursued.

It is within the context of a future of determination that I would like to concentrate on the crucial importance of specific government decisions and actions, if the industry is to be re-invigorated and, therefore, flourish in the coming decade.

The question, "Has Canada a future as a metal producer in the 1980's?" could better be phrased: "Do you want Canada to be a major mineral producer in the 1980's?", for you will determine the future. The mining industry of Canada will prosper only if you, the ministers of mines in the governments of this country, decide definitely and deliberately that it shall prosper.

Surely a prosperous mining industry is important to Canada? We need increased productivity, employment, trade and foreign exchange, all of which a flourishing mining industry will help provide. I hope you will decide that Canada in the 1980's will once again become the most rapidly developing, the most vigorous and the most advanced mineral producer in the world.

The decision must first be taken deliberately and then implemented without equivocation. This decision must shape your views on all policy issues, regulations and taxation practices. As there is, in fact, no recognized principle by which the propriety or impropriety of government interference is customarily tested, we must therefore have long-term objectives against which proposed government action can be examined and tested.

Most of you are familiar with Murphy's laws which start from the premise that: "If anything can go wrong, it will!"

You may not be as familiar with the "universal laws of perversity" which engineers often encounter in their design of complex structures. One of these laws states: "The more innocuous a change appears to be, the farther its influence will extend, and the greater the likelihood that it will wreck the whole scheme."

Let me be specific about some things that must be resolved. Officials in diverse branches of government dealing with mining must co-operate, not only with the industry, but with each other. This is not happening now. We must reduce the adversary relationship which too often characterizes communication between industry and government and between agents of one government jurisdiction or department and those of another.

Conflicts between federal and provincial governments, between a department of one government and its counterpart of another government and between separate departments of the same government have too often, in the past, curtailed the development and inhibited the productivity of the industry. Twelve provinces and territories. Twelve governments. Twelve separate jurisdictions. In effect, 12 nations. Only in Canada does a *domestic* corporation—without ever leaving home—have to conduct its affairs as would a multinational.

The well-being, not only of Canadian mining but also of Canada as a nation, requires that the laws and regulations of the provincial and federal governments be coherent. Freedom of movement throughout the country for Canadian workers and products must be assured. Employment practices, ownership of land and the rules of competition and marketing must be made reasonably uniform.

All provincial areas of responsibility, and particularly those governing mining activities, suffer from an expanding overlay of assumed federal responsibility. Not willing merely to ensure that their interests are protected by provincial actions, diverse federal agencies seize every opportunity to intrude with their own, often conflicting, regulations.

Consider for example, pollution—an agreed-upon provincial responsibility. Each province takes its own separate legislative action and issues regulations by which individual and corporate citizens must abide. The lack of uniformity in pollution laws and regulations in the different provinces is disconcerting enough to a nationwide company. But, if the pollution involves water (as much of it must), then it most likely involves *fish* and most fish are *federal*. Or if *air* is involved, air is international and international relations are federal. Administration of these federal responsibilities must be delegated to provincial governments if order is to prevail and if the industry is to move. Furthermore, the growing number of statutory bodies with continually expanding staffs, working in most areas of social and economic policy, provide increasing scope for duplication and for conflict. Duplication is wasteful, but conflict is destructive.

Conflicting directives from governments produce only inertia. Conflict is damaging, not only to us in the mining industry. It also defeats governments' efforts to achieve their economic objectives for the provinces and for the nation.

The demarcation between provincial and federal responsibilities must be sharpened. Likewise, the mandates of the different statutory bodies must be clearly defined and strictly followed.

But, although necessary, demarcation alone is not the complete answer. Each group must become sensitive to the possible side-effects which its intrusions may have on our economic system.

In a desire to cure each of our society's perceived ills, the best of intentions are not enough. The real test is the final result.

When a 15th century knight went into battle he was completely encased in steel body armour. Each segment of armour was justified for the protection it gave to some vital part. But the overall result made it then necessary to set up a block and tackle to seat him upon his horse. He was so encumbered that if unhorsed, he was at the mercy of his more mobile competitors—he had lost his ability to move.

Mining corporations—the front line troops of the mineral sector in this competitive world—feel they are becoming dangerously encumbered.

In the last decade, governments have shown far greater interest in regulating—and hence restraining—mining in Canada than in setting objectives and goals. The decisions which most affect the industry have come, not so often from elected representatives, as from statutory bodies and government officials. Consider one example. Mining in the north and in the more remote parts of individual provinces (where in fact, the vast majority of Canada's mining activity takes place), suffers from a veritable plague of administrators who regulate how we dig a hole, whom we employ, how we feed and clothe them, what products we make and to whom and how we sell them. Nowhere do we find, however, any evidence that the government has determined that these northern regions should be developed or that the mining industry should prosper. In fact, evidence to the contrary is accumulating rapidly. According to

recent policy statements, 40 per cent of the north—20 per cent of Canada's land mass—will be placed off-limits to mineral exploration. Policies that retard northern development in this way are detrimental to the industry, to the native people of the territories and to our country.

Multifarious regulatory actions, combined with a lack of stated objectives, seriously hamper the ability of the mining industry to function. What is required of governments is the setting of long-range objectives. The mining companies, then, should be left to work out the details of how to accomplish those objectives.

I expect well-thought out objectives to include pollution standards, wildlife management, etc., as well as efficient production of metals. What we need are standards that are not capriciously set and then constantly changing, to enable us to design and build our plants—and to get on with our tasks. There are ways to exploit our mineral resources with due regard for the environment and, together, we can find the ways.

Some may demur, saying that detailed regulations are required in order to "plug" loopholes in the law, that general objectives without specific stipulations are too easily ignored. To this I would say that laws with "loopholes" must be seen for what they are—failures by governments to legislate properly. They should carry the same public stigma as "recalls" in the automobile industry. Objectives that are rational, clean and consistent do not need innumerable regulations and compulsions to ensure industry's compliance. Indeed, industry is waiting for just such objectives. I might add that we in the mining industry are good citizens of Canada and since the founding of our country, have contributed mightily to Canada's development and prosperity.

In the 25 years prior to 1969 when Canada had a tax regime for mining which was conducive to strong growth, the productivity of the mining sector increased at a rate three times that of the rest of the economy. This was the only sector of the Canadian economy to do so. Its growth in output provided a powerful stimulus to the whole economy. All regions of the country benefitted, particularly those unable to support other forms of economic development. The industry has far reaching and important economic linkages and is a major contributor to the wealth, employment and trade balance of our country. The relative performance since tax reform shows clearly that the pre-1969 tax levels gave proper weight to the fact that the industry carries, in addition to federal and provincial taxes, heavy municipal taxes and other government levies. In many cases, mining companies must support the infrastructure costs for townships, power generation and transportation not borne by other segments of our economy. When all these facts are considered together, it is clear that the stability and tax levels prior to tax reform, served our country well.

Previous Conferences of the Provincial Mines Ministers have concluded with resolutions endorsing specific courses of action. Last year's resolution was that the mining taxation laws of the nation be brought into harmony. This was a resolution of potentially great benefit to the industry and one whose implementation we are eagerly awaiting.

From this year's Conference, rather than a specific resolution, I urge the assembled provincial ministers of mines to resolve that Canada in the 1980's shall once again be the leading mining nation

of the world. I ask you then to undertake to evaluate every policy, regulation, tax or other government action, existing and proposed, in the light of your determination. The objectives which you decide upon for mining, plus, the degree of resoluteness with which you pursue those objectives, will determine Canada's future as a metal producer.

The state of the national and provincial economies is a measure of the success or failure of their responsible governments. Similarly, the performance of the mineral sector of these economies is an index of effectiveness of the policies of their department of mines. Every holder of a mines portfolio should make it his responsibility to see that everything his government does, facilitates the attainment of the objectives for mining.

Let each of you perceive himself not only as the Minister of Mines but as the Minister *for* Mines. The mineral sector of the Canadian economy will reach its full potential in the 1980's if only you, as Ministers for Mines, decide to create the necessary favourable environment for the industry and then to follow through resolutely.

In order that the 20th century—and the 1980's in particular—belong to Canada, three things are needed:

*A strong productive work force,  
a clear determination of national objectives and,  
most of all, resolute and enlightened leadership.*

The future will not make us rich but, together with determination, we can make the future rich.

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**Submission of briefs  
to ministers**

**Présentation de mémoires  
aux ministres**

**Chamber Objectives**—The Alberta Chamber of Resources comprises approximately 400 corporate members, who are dedicated to the orderly development of mineral resources. Our members' collective interests embrace a broad spectrum of minerals, including: metals, energy minerals, industrial and construction minerals. Although most of our member companies are Alberta-based, many of them have significant business interests in the Territories and in other provinces. Part of our role, in conjunction with other industry associations, is to monitor government legislation and regulations to permit assessing the impacts on our members' operations and future interests.

For more than 25 years, our chamber has also operated as the Alberta employment agent for several companies requiring skilled workers for remote northern locations.

Over the past 42 years of our chamber's existence, there has been a dramatic increase in the influence of governments upon all mineral developments. The detrimental effects of this trend, plus the resultant conflicts, were recently recognized by both provincial and federal authorities. We advocate a more expeditious resolution of the harmful differences—both within and between governments—and a return towards more emphasis on competitive enterprise.

**Ministerial Conferences**—We are indeed grateful for this opportunity to submit proposals to your conference. It is our sincere hope that your deliberations will enhance the jurisdictional milieu which affects the future of the Canadian minerals industries.

Recognizing that this is a conference of provincial ministers, we submit that there are many issues which call for greater cooperation between provinces. The matter of social concerns provides some pertinent examples, i.e. environmental protection; industrial health and safety; workers' compensation; vocational training; etc. Another common objective which would benefit from more inter-provincial liaison would be the development of secondary industries. The same motivations would also apply to federal and territorial jurisdictions.

**“Mining”—A Canadian Asset**—The term “mining” has evolved from its original narrow connotation into a much broader concept related to a multitude of techniques for the commercial exploration and recovery of minerals from their natural deposits. This is readily demonstrated by an examination of the variety of resource activities identified as “mining” in different provincial classifications of their respective industries.

Canadian mining expertise is respected and sought by many countries. However, it does not get the appreciation which it deserves within Canada. We would advocate greater recognition of Canadian mining technology by federal and provincial authorities, especially when assessing the beneficial impacts of exploration, development, and

reclamation.

The current posture of the Canadian mining industry could pass any objective test for its responsible attitude on the popular social issues of: environmental protection, health and safety, regional benefits, etc. While recognizing that certain pressure groups, within and outside of governments, have helped to accentuate this social conscience, we submit that the time has come to restore the trust to which our Canadian industrial experts are entitled. In this context, we would propose that pertinent government legislation and regulations should incorporate more practical industrial experience, both in their formulation and administration.

**Native Employment**—On the sensitive issue of native employment, we would suggest a re-appraisal of certain government strategies.

One of our concerns relates to unwarranted government pressure on some industrial employers to hire natives. In principle, the industry is anxious to train and promote local people including natives. For many of the skilled, jobs, however, there are established standards of education, vocational training, and apprenticeships, which have been developed cooperatively by governments, industry, and organized labour. In order to expedite and expand the noteworthy efforts of many of our resource companies, governments must provide and enforce the educational and training standards to which they have committed other Canadians. Labour unions also have a responsibility in achieving our objective of providing job opportunities for natives.

Another concern results from government's insistence on special privileges for native workers, such as transportation and excused absence. Wherever these enforced privileges exceed the pattern established for the work group, the employer is confronted with labour unrest which is particularly disruptive in remote locations. We submit that the principle of equality should prevail. If this is not considered feasible, then the employer should not be penalized with the extra costs of any special concessions.

Quite apart from employer considerations, we have a genuine concern for the equitable treatment of natives. There are several industry-sponsored success stories in this regard. Consideration should be given to re-vitalizing the joint federal/provincial programs such as New Start which—especially in Alberta—generated some useful experiences.

**Land use Restrictions**—We are disturbed by the recent rash of land use restrictions, particularly in the territories. Exploration and development have been arbitrarily prohibited in enormous tracts of land without sufficient consultation with all parties affected. Ideally, such consultations should form an integral part of assessing alternative land use options and their respective ultimate benefits.

Within each government jurisdiction, the

delegated authority and allocated funds should ensure a conclusive evaluation of mineral resources and feasibility of their development on a competitive basis.

**Conclusion**—Our observations and suggestions are prompted by a deep concern for the Canadian economy.

Ironically, the exploration and development of several mineral deposits are being impeded by factors such as those cited in this brief.

Encouragement for our mineral resource industries, by cooperative government efforts, is vital to improving the economic and social conditions, both regionally and nationally.

The Canadian Geoscience Council welcomes the opportunity to address the Provincial Ministers of Mines on the occasion of their Annual Meeting, Toronto, September 1978.

The Council is a forum of representatives of 11 major Canadian earth science societies working together to encourage the development of the geosciences in the best interests of the nation. The member societies have an aggregate active Canadian enrollment of more than 12,000 geoscientists.

Foremost among the objectives of the Canadian Geoscience Council are the provision of advice to governments on science policy, the promotion of science education, and the provision of informed opinions on matters of public concern relating to the earth sciences.

**Background**—Few Canadians realize the importance of geoscience to the Canadian economy. As a producer of minerals, Canada ranked third in the world in 1977, with total production valued at \$18.1 billion. The minerals and fuel industry directly employs 148,000 Canadians, and indirectly creates jobs for so many others that the total employment impact of the industry affects roughly nine per cent of Canada's labour force.

Mineral exports account for 30 per cent of the value of all Canadian exports each year. In fact, the export earnings potential of the Canadian mineral industry has been in the past, and can be in the future, our strongest trump card in a highly competitive trading world.

Unfortunately, all mines or oilfields sooner or later become depleted. Therefore, the prime requisite of a healthy mineral industry is a continuing, vigorous and successful campaign of exploration and development, in order that new deposits may be available to replace those which have been exhausted.

Mineral deposits are becoming more and more difficult to find, and those engaged in mineral exploration are calling for help in the form of improvements in the geoscience data base, the formulation of effective exploration concepts, and the development of increasingly sophisticated exploration techniques and equipment. Whereas there is little doubt of the technical ability of Canadian geoscientists to provide the essential aids to mineral discovery, it is less certain that the magnitude of the problem will be recognized in time, and the necessary financial support given to research and development.

**A step in the right direction—The Ontario Geoscience Research Grant Program**—The Canadian Geoscience Council has addressed itself to the task of convincing the public and governments of the need for increased and more effective funding of all earth science research. One of its associated groups, the Council of Chairmen of University Geoscience Departments, has directed its attention to a specific aspect of the problem—the solicitation of funding for intermediate-range, mission-oriented research subject to a peer review system. This

approach achieved a major success in November, 1977, when the Province of Ontario announced the establishment of its Geoscience Research Grant Program. This program is designed to foster the expansion and improvement of applied geoscience research carried out in Ontario universities, with the following specific objectives:

- 1) Definition of the parameters of geological environments favourable to the occurrence of valuable mineral resources, and devising methodologies to aid in discovering these resources.
- 2) Provision of geoscience information to assist and improve the existing Ministry of Natural Resources earth resources program.

The program is not intended to support or supplement basic geoscience research of the type normally eligible for funding by national agencies. Its support can be readily directed towards solving those problems of specific concern to Ontario. The program provides funding of \$500,000 per year for an initial five-year period. Applications are reviewed by a committee which includes representatives from industry, the universities and the Ontario Geological Survey. Data obtained from funded projects must be made available to the public within twelve months of the termination of the research.

The Ontario program has been implemented with commendable speed. By May, 1978, 24 grants totalling over \$400,000 had been made to 10 Ontario universities. Although it is much too early to assess the effectiveness of the program, it is a remarkable fact that the creation of this fund has, at a single stroke, doubled the amount of money available to support research on exploration-oriented geoscience projects in the Ontario universities. The Canadian Geoscience Council is gratified to have been involved, in an advisory capacity, in the selection of industry representatives to the committee which administers the new fund.

**Recommendation**—Several provinces have in recent years added substantially to their staffs of geoscientists because of their increasing involvement in highly specialized earth science activities. We feel that this trend will continue, and that the provinces will gradually assume more and more responsibility in the many fields of applied geoscience.

The Canadian Geoscience Council is well aware that some provinces are already supporting various forms of earth science research in their geological surveys, research councils, museums and universities. However, we feel strongly that there is a need for the provinces to increase their level of research funding, and that this can be done most effectively through sponsoring programs similar in scope and structure to the Ontario Geoscience Research Program. Our studies of the status of the geosciences in Canada have pointed clearly to the need for increased research funding, and have also indicated clearly that with a few exceptions, only the universities possess the combination of specialized

scientists and expensive facilities needed to carry out effective geoscience research.

*Accordingly, we recommend that the Ministers of Mines give serious consideration to increasing the funding of mission-oriented geoscience research in the universities of their provinces.* Such research, when funded by the provinces, can be directed most effectively towards solving their individual problems in critical resource areas.

The Canadian Geoscience Council stands ready to advise and assist in the formulation and administration of provincial geoscience funding organizations.

**The Role of the Canadian Geotechnical Society in Canada's Resource Development**—We were pleased to receive an invitation to submit a brief to this conference on our concerns in the field of mining in Canada. In submitting this brief, our purpose is to describe the role of the Canadian Geotechnical Society in Canada's resource development indicating some areas where the provincial ministries could provide useful input or interaction in future geotechnical and geological studies.

The scope of geotechnical activities in our society includes the study of the properties of soil, rock, peat, snow and ice, the influence of environmental factors on such properties and the application of this knowledge.

Our society was formed in 1972 after a background of some 25 years operating informally under the umbrella of the National Research Council, Associate Committee on Geotechnical Research. We have approximately 900 members. Our board of directors is composed of elected directors and ex-officio members. We have eight elected directors who represent the local sections across the country. We have one division known as the Engineering Geology Division with 675 members. We are responsible for the Canadian Geotechnical Journal published by the National Research Council. This journal as you probably are aware has gained high international recognition. We are a constituent society of the Engineering Institute of Canada.

The Canadian Geotechnical Society sponsors and participates in the Annual Conference which is held in various parts of the country on a rotating basis, being organized by a local section of the society. The annual conference is usually 2 days, papers usually prepared in accordance with a theme. This year the 31st Annual Conference will be held in Winnipeg in October, the theme, "Groundwater—A Geotechnical Consideration". Typically, the attendance varies between 200 and 300 people with fair representation from outside the country. We would welcome your attendance or representation at these meetings.

The local sections are organized with their own executive and these sections run active programs each year largely consisting of technical lectures and seminars. At the national level the society has organized a number of technical committees which have been given specific assignments in their respective fields. These committees are: 1) Foundations; 2) Tunnels; 3) Slopes; 4) Embankments.

We also have two task groups, one on Standards and Metric Conversion and the other on Computer Applications. The foundations committee has recently revised and prepared for publication the foundation manual. This manual prepared originally under the N.R.C. National Building Code Revision Committee and was turned over to the society for publication. This document was intended to provide guidance and standardization for the design of

building foundations in Canada. It has been well accepted and has recently been put on the market for wide distribution. The tunnel committee was recently formed and has proposed a very active program which will include the preparation of monographs on urban tunnelling, underground storage, tunnelling in frozen ground, tunnelling in tar sands, groundwater control, and the use of boring machines. The other committees are formulating programs aimed at identifying problems peculiar to Canada which they will address in due course.

We feel the activities of the Canadian Geotechnical Society will be of interest and value to those engaged in mining activities. We acknowledge the traditional geological activities of the provincial ministries in support of both metal and industrial mineral deposits. We note particularly the recent work on aggregate resources and geotechnical studies recently carried out by the Quebec and Ontario ministries. We also look with pride on the input provided by the major geotechnical consultants in Canada's mining activities particularly in slope stability studies in open pit mines, the tar sands projects, the siting of mining facilities and townsites and the design of tailings dams.

However we feel there is a need to integrate more closely the service provided by the ministries and their agents with the work and needs of the geotechnical community. As an example we would like to identify the following topics for discussion:

**Compilation of Geological and Geotechnical Data**—There are large masses of geotechnical data being compiled by consultants and governmental agencies across the country. If this data were assembled, condensed and made available in map or computerized form for general use for engineers and geologists it would be of great value in assisting the development of mineral resources, as well as the overall development of our resources. This has been attempted in the past for urban areas, but for one reason or another, was never completed. It is suggested that the provincial ministries consider the development or the extension of existing data systems for the dissemination of geotechnical and geological data for both urban and non-urban areas.

**Waste Disposal Sites**—The management or disposal of waste material is a major concern in mining. It is also a common problem across the nation in respect to the disposal of domestic, industrial and hazardous materials. Although the problem is a multi-disciplinary one with a great deal of input from many sources, the geological and geotechnical input is extremely important, particularly in the preliminary stages. We feel that more basic geological information is needed particularly in developed or urbanized areas.

**Land Subsidence**—Surface subsidence results from the subsurface removal of either solids or liquids. It is a common problem in removal of solids by conventional mining but also by solution mining and natural dissolution. Also, the removal of liquids

including groundwater by pumping has serious long term ramifications. For both industrial and residential development, a better knowledge of such occurrences is needed.

For the latter two topics, we would suggest that more engineering geology studies including remote sensing surveys are required in both urban and non-urban areas and areas which may generally be classified as hazard areas. While we do not suggest such work should necessarily be done in-house, we feel the ministries should have a responsibility here to administer such work by the capable consultants which are available in the various fields. The Canadian Geotechnical Society would be pleased to confer and discuss such activities with the ministries and assist in whatever activities may be generated.

We hope, in this short brief, that we have provided a good description of our structure, activities and future plans and have conveyed to you some food for thought in respect to future input to geological and geotechnical studies by the Provincial Mines Ministries.

## Coal Association of Canada

by Garnet T. Page

Honourable Ministers, the Coal Association of Canada is grateful for this opportunity to present to you a statement of the major issues confronting the coal industry. We look forward to discussing these matters with you.

We recognize that, in some provinces, the assignment of legislative responsibilities for mining and for energy are combined. The production of the mineral called coal is clearly of concern to the mining jurisdictions, and is the basis of the issues we raise in the context of this conference.

Canada's energy needs are increasing. Coal is our most abundant and versatile fuel, and Canada has more than enough energy in its coal resources to fill the energy gap arising from diminishing supplies of other fuels.

Coal is also a valuable commodity of trade with other nations. The mining of metallurgical coal, export sales of which yielded more than one-half billion dollars of foreign exchange last year, is of vital concern to Canada's future prosperity. There is also a growing potential market for Canadian thermal coal in other countries.

Canada has an abundance of coal to serve its domestic needs and those of its major trading partners for centuries to come. However, the coal industry's potential is significantly dependent on actions taken by governments on many matters which, collectively, greatly influence its potential for development.

### Major Issues-

1) *Need for Positive Governmental Attitudes to Coal Mining Development, Coal Utilization and Coal Export*—Coal mining development provides a significant stimulant to the nation's economy. Canada has an enviable advantage over many other industrialized countries—its enormous potential source of energy. Canada's coal reserves are clearly adequate to support substantial exports over a long period without jeopardizing Canada's own requirements. Further coal mining development should be encouraged immediately, otherwise this resource could be largely by-passed by technological developments in the next century. The stimulus provided by such growth to the economy and to employment are clearly essential in today's climate.

Without coal policies which support coal mining development, coal utilization and coal export, such development cannot be accomplished effectively. Policies should include the substitution of coal, wherever practical, for other more valuable and easily transportable fossil fuels, particularly for thermal purposes. Such action would also serve to reinforce the efforts of governments to conserve oil and gas.

2) *Need for Appropriate Fiscal Policies of Governments*—Government policies must provide a stable and attractive investment climate. Taxation, royalties and other payments to govern-

ments must be such that the private sector can profitably develop the coal industry and achieve a consistent level of activity over a long period. We do not support government subsidies in any part of the coal industry, but we do support a realistic tax and royalty structure to encourage its development.

It is essential to minimize non-productive costs to maintain a favourable competitive position for this valuable mineral. Canada's major benefit from a large, healthy coal industry will arise from increasing jobs and a broader tax base, rather than from increasing direct taxation and other payments on a production basis by the coal industry.

3) *Need for a Realistic Approach to Government Regulations, Requirements and Controls*—It is apparent that there is often insufficient coordination between various government departments and levels of government. In many cases, somewhat vague policies are interpreted and administered differently by different agencies, and their decisions are sometimes unduly delayed. Far too much industry manpower and money are required in essentially non-productive efforts to fulfil some government regulatory requirements. While many of these requirements are conceded to be valid, the considerable overlap, duplication and unnecessary detail involved in various submissions and reports should be eliminated.

4) *Need for Equitable Costing of Transportation*—Coals must be delivered over long distances for use either in central Canada or for export. Because of this, transportation charges are seen as the largest single negative factor in Canada's competitive position in the international coal market and in the expanded use of Canadian coal in central Canada.

The geographic location of Canada's major coal resources is unchangeable. Therefore it is necessary to ensure that Canada's efficient coal transportation system establishes coal freight rates that are set on the basis of the actual cost of moving coal. We urge you to persuade your ministerial colleagues responsible for transportation matters to make every appropriate effort to keep coal transportation costs at equitable levels, fair to both carriers and shippers.

**Conclusion**—The issues presented are, in our opinion, those of prime importance to governments with respect to the development of coal mining in Canada. The industry faces other problems, but we consider that if real progress can be made by governments in resolving those indicated above, most of the others will be alleviated considerably.

The coal industry appreciates the cooperation it now receives from governments. The Coal Association of Canada looks forward to continuing this relationship, and extending all possible assistance in working toward the resolution of the problem areas referred to in this submission.

In 1977, a brief was prepared for the Geological Association of Canada and presented and distributed at the Provincial Mines Ministers Conference in Quebec City. A short version of that brief has subsequently been published in the annual report of the Canadian Geoscience Council entitled "The Geosciences in Canada, 1977", and is attached to this submission.<sup>2</sup>

The G.A.C. is an organization of 2,700 members from all across Canada and it is one of the member societies of the Canadian Geoscience Council. It has a deep interest in the health of the earth sciences in Canada both because it is one of the basic scientific disciplines and because knowledge of the earth is essential in almost every aspect of Canadian endeavours.

The past two decades have seen truly remarkable changes in the study of the earth and its behaviour. The great revolution of plate tectonics and the pattern of moving continents and sea floor has brought new life and new momentum. This revolution has been likened to that of the discovery of the circulation of blood in humans. Following that fundamental discovery, there were obvious changes that occurred in the practical aspects of the delivery of health care. In the past two decades we have returned materials from the moon and we are now seriously planning for the return of samples from Mars, asteroids and comets. The analytical tools that have been applied to geological problem solving have opened new frontiers.

We have new models, new theories, new data, new tools and an expanding information base on which to build a new generation of endeavour in the practical problem of the exploration for minerals.

In the late 1940's and early 1950's airborne magnetometers were widely applied to mapping and exploration. In the late 1950's airborne electromagnetic methods were widely adopted and at about the same time airborne gamma ray spectrometers were brought into wide use. These developments represented a new dimension in geological mapping and acquiring knowledge of our country.

The next generation of the earth sciences now has a solid foundation and there seems to be little doubt that many scientists are willing and anxious to make contributions to the practical problems of resources.

We have a small base of scientists at our universities. We have a small but aggressive technology development sector. We have the need to develop new methods and new ideas for exploration, for mapping and for land utilization. One of the questions which faces mines ministers is how to develop and exploit our human resources to continue to provide the solid geological base necessary to our Canadian way of life.

One aspect of this is to provide economic incentives and rewards for those who have the courage to explore. I will not address this issue since there are

many other groups at this meeting who are surely speaking to this issue in detail. It is, however, also necessary to provide incentives to the technological community to ensure that we know as much as possible about how economic concentrations of minerals are formed and to have methods and techniques available for deep exploration.

Somehow, in the suspicious society in which we live, it is thought that the people of science and technology are primarily looking after themselves. How often have I heard federal economists and bureaucrats express the view that this community is "self-serving". I find this attitude particularly upsetting because I really believe that many of us feel that we have something essential to contribute to our national fibre. I continually fail to understand why the attitude is not one in which the system seeks to exploit and to strengthen what we have in the area of science and technology.

In this regard, we must congratulate the Province of Ontario, our hosts at this occasion. They have had the foresight to establish a research fund to develop the provincial capacity in three areas:

- (a) the nature and origin of ore deposits,
- (b) methods and techniques for deep exploration and
- (c) the utilization of the earth for construction materials and for the disposal of wastes.

This program has now started and the response from the universities demonstrates a keen interest in doing this type of research. Perhaps one of the keys was using the incentive of quality assessment by peer group review as well as the criterion of relevance.

Discussions are now underway in Ontario to establish an earth science technology development fund for development of new instrumentation. There are not details as yet, but it is clear that the scale of technical skills that are needed has multiplied and anyone who wishes to explore in already heavily-explored areas will need access to such tools. Mechanisms to provide incentives and contracts to the entrepreneurial, but small technology sector are urgently required.

We hope at next year's conference that this province will announce that it has moved to provide a firmer base for these technology-oriented companies and to help keep our industries at home. Canada has been a leader in these disciplines in the past but we need more activity in the development of methods such as cryogenic magnetometers, chemical analytical methods for rock geochemistry and drill hole methods for deep exploration.

It is interesting to consider for a moment that our economy and, in particular, our mineral sector has as its first element, science and technology. Without this we would have no industry and certainly there would be little capacity to generate wealth. In the final few minutes I should like to call your attention to a noteworthy comparison in the federal budget.

The foreign aid program of this country is directly

based on our capacity to produce. The federal foreign aid budget is \$1.2 billion and represents 0.51 per cent of the gross national product. While there are logical and humanitarian reasons for these expenditures they assume that we have a healthy economic base. The total federal budget for science and technology is \$1.8 billion. This is about 0.75 per cent of the gross national product and is lower than that of Australia, France, Germany, Japan, the Netherlands, Sweden, Britain and the United States. This is the investment we are making at the front end to ensure that we have a healthy scientific and technological base and it is only slightly more than we put into foreign aid.

Gentlemen, I conclude by stating that those of us involved in the science and technology of the earth should not be embarrassed if we appear to be self-seeking. Instead, we should stand up and demand a system that capitalizes and exploits our services, for without us, the health of the mineral industry in Canada will eventually be seriously weakened.

I consider it a challenge to the provincial mines ministers to ensure that they are investing enough in the productive and potentially productive sectors of our society and recommend that mechanisms to stimulate research and technological developments in the provinces be put into place.

1. This address was prepared by D.W. Strangway, Vice-President and does not necessarily represent the views of the membership.
2. The 1977 brief has been published in the Proceedings of the 34th Annual Conference of the Provincial Ministers of Mines, and is not included in the present publication—Ed.

## **Metric Commission Canada, Sector 4.01 (Mines), Legislation Sub-Committee**

by M.N. Collison

With the advent of the immersion of the Mining Industry across Canada, into the use of SI by Jan. 1, 1981, the various legislative bodies have the opportunity to standardize their respective legislative acts and regulations. Although each provincial body has its own area of specific concern separate and distinct from others, there is an opportunity in this conversion process to standardize on both the unit used and the measured quantity. The safety aspects and intent of each particular segment of the legislation must be given consideration.

As a result of the cooperation received from various provincial authorities this sub-committee, in reviewing proposed legislative action, considers the following points as being worthy of consideration in preparing the final draft of legislation and regulations concerned with adoption and application of the SI system of measurement in the Canadian Mining Industry.

1. Adhere to the rules for the use of SI.
2. Hard convert where practical.
3. Provide national uniformity, as far as practicable, of converted quantities and units.
4. Include "grandfather clause" in SI version of legislation and/or regulations.
5. Give consideration to the industry's target conversion date of 1 Jan. 1981 when establishing the date for implementing the SI statutes.
6. Use SI units only. Do not use dual units.

Comments relating to items 1-4 are contained in letters of 26 June and 18 July 1978 from this sub-committee to various provincial and federal authorities. (Copies of these letters as well as a

copy of the "Summary of Metric Conversion Plan" of Sector 4.01 Mines can be obtained from Mr. C.A. Rockburne, Sector Plan Manager, Metric Commission Canada, Ottawa K1A 0H5: Ed.) One final comment concerning the desirability of uniformity in legislation and regulations—miners, technical personnel and contractors do move around the country. Uniformity minimizes the chance of mistakes and accidents. Following the rules and practices recommended in the Metric Practice Guide will promote uniformity and understanding of the converted legislation and regulations.

*The Metric Practice Guide for the Canadian Mining and Metallurgical Industries prepared by Sector Committee 4.01 (Mines) of Metric Commission Canada and published by The Mining Association of Canada has been prepared to assist in making this change and to promote uniform and correct use of SI.* Sector 4.01 includes the mining, smelting and refining of metals and minerals and the exploration for same, with the exception of aluminium, which is in Sector 4.05. It has experienced active participation in its activities by many companies and universities as well as the Mining and Coal Associations of Canada and Metric Commission Canada. This practice guide should be a valuable tool both in the conversion process and toward standardization.

**A summary of an audio-visual presentation entitled: "Future opportunities for Canadian Mining".**

The visual presentation, which lasts approximately 40 minutes, consists of some 100 slides, supplemented by commentary. Many of these slides are in the form of detailed econometric graphs, charts and/or tables that attempt to summarize a large volume of data of international and national significance to the theme of this year's Conference of Provincial Mines Ministers—*"Has Canada A Future As A Metal Producer In The 1980's?"*

The presentation consists of six parts:

- 1) Overview of Canadian mining, 1975 to 1978,
- 2) Signs of a new era,
- 3) New opportunities,
- 4) Some problem areas,
- 5) Taxation, and
- 6) Towards the 1980s.

After a brief review of conditions in the mining industry during the past three years, the presentation addresses itself to the prospects for some future opportunities, emphasizing Stage I (concentrate production) of the mineral industry.

However, as in all such cases, the framework of information on future trends and opportunities should be regarded with some caution. For any given year in the forecast period, the actual figures will very likely swing widely about the currently expected trendlines.

For the immediate period ahead, the mining industry will continue to be subjected to a process of adjustment that is likely to be further characterized by all the familiar difficult economic circumstances of the past few years.

Erratic economic growth, changing markets, new inflationary pressures, further difficult trade negotiations, escalating commodity related activities by governments of many of the lesser developed countries, all over-shadow the expectations for the years ahead.

These uncertainties are further compounded by the realization that a number of essentially "home-grown" problems, such as taxation of the mining industry, must still be resolved.

Nevertheless, there now do appear to be grounds for cautious optimism that a more broadly based recovery could materialize by the early to mid-1980s. A number of signs, such as the fundamental demand strength for most minerals, improving government industry relations, and a gradual return of confidence, augur well for the future.

The presentation concludes by observing that Canada's mining industry, with a proven track record as a world leader, is today still one of the most competitive in the world. In this regard, the fundamental challenge now lying before us is whether or not our industry will be in a position to fully participate in and respond to new opportunities expected in the years ahead?

**Overview of Canadian Mining: 1975 to 1978**—A broad range of industrial indicators reveal that in many respects the previous three years have been

the worst cyclical recession for our sector during the past 25-year period.

A large output-gap in relation to the manufacturing sector and to a cyclically adjusted GNE-line, is one of the most dramatic on record for any sector of Canada's economy.

A low-capacity utilization rate relative to the national industrial average; declining real capital expenditures (particularly on new facilities); serious liquidity problems; declining profit levels, dividend payments, and off-property exploration expenditures, all further underscore recent trends.

Confronted with low metal prices, with a dramatic increase in world inventories, and with the realization that once again no significant surge in world economic activities would take place in 1977, and probably not in 1978, a number of our producers found it necessary to take additional steps to bring production and consumption more into line.

Many of the actions already taken involved difficult decisions. This is particularly true of the reduction in employment at several locations.

The past few years have truly been one of the most difficult periods for our industry.

**Signs of a new era**—Against a background of continuing unpredictable international circumstances, and despite a slow-growth recession here at home, a number of other signs do suggest that a new era may be dawning for Canada's mining industry. These are:

- 1) A fundamental demand strength for most minerals,
- 2) Improved government-industry relations,
- 3) A gradual return of confidence,
- 4) New opportunities in concentrate production, and
- 5) A government review of mining taxation.

Following an examination of estimated world consumption or demand for some minerals in the years 1974 to 1977, the presentation notes that recently a consensus has emerged from various government and industry analysts that the average annual rates of increase in consumption/demand will very likely not be as high for the foreseeable future, as was the case a decade or more ago.

These estimates are then compared to more optimistic forecasts from the U.S. Bureau of Mines, and we conclude by noting that whatever the actual figures will be in the years ahead, progressive moderate increases on the demand-side should provide a substantial foundation for the industry's future expansion.

Thus, the fundamental challenge now lying before us is whether or not the Canadian Mining Industry, and particularly our metal producers, will be in a position to fully participate in and respond to new opportunities expected in the years ahead?

**Period of adjustment**—Over the next two to three years we expect that the overall performance of Canada's mining industry will most likely be characterized by familiar difficult economic circum-

stances, both at home and abroad.

The duration and extent of this period of adjustment will be influenced significantly by problems on the supply and cost side; by our own particular domestic difficulties; by changing market structures and by the uncertain international economic environment.

**New opportunities**—In assessing the longer-term prospects for Canadian mining, we now believe that one of the best future opportunities could very likely be in the specific area of concentrate production, commonly referred to as Stage I of the mineral industry.

This increase in output will have to come from a substantial number of new mines yet to be brought on-stream, and from production increases at existing mines.

Our assessment is based in part on the realization that for many metals there currently appears to be an over-capacity of smelting and refining on a worldwide basis. Given the dramatic increases in unit costs of new capacity, we believe that it is unlikely that significant new capacity in the smelting and refining areas will develop in the near future.

For Canada, in the foreseeable future, the question of further domestic processing is essentially a regional issue that relates to a possible zinc reduction plant in the east, and to a possible copper smelter-refinery in British Columbia. Aside from these two prospects, much of the expected domestic activity in this field is likely to be restricted to modernizing and improving existing capacity.

The presentation concludes by noting that against a background of recent investigations into all stages of the mineral industry, it is now becoming more apparent, that for the immediate period ahead, our efforts should direct themselves to the following three objectives:

- 1) Expand mining exploration,
- 2) Encourage new mine development, and
- 3) Encourage expansion of existing mines.

Thus, for the next few years, our efforts, and those of the governments, should direct themselves to revitalizing these critical parts of our industry.

**Some problem areas**—If we are ever to fully realize the benefits of future opportunities, then during the next two to three years every effort must be made to work together and resolve a broad range of mutual problems.

Some of these problems are:

- 1) Taxation,
- 2) Regulatory over-kill,
- 3) Uncertain economic conditions,
- 4) Decline of exploration and new mine development,
- 5) International mineral developments,
- 6) Manpower,
- 7) Transportation,
- 8) Northern restrictions, and
- 9) Communications.

As we all realize, some of the industry's problems are of our own making; many others are not.

At the same time, some of these problems have their origins in depressed international markets, or, like inflation, are common to our whole economy. Many other problems, however, are particular to the mining industry and originated here at home.

One of the "home-grown" problems, and perhaps the most contentious obstacle still remaining, is the issue of taxation.

**Taxation**—In its various submissions to both the federal and provincial governments, the Mining Association of Canada has repeatedly stated: "Although taxation is not the only problem affecting our industry, we firmly believe that the prospects of the continuance of the present systems represents one of the greatest deterrents to the future growth and expansion of our industry."

Our conviction arises out of three important areas—from the many unfortunate public perceptions behind the most recent tax rate increases, from the manner in which the present tax systems were implemented and from their dramatic impact on the mining industry.

Following a brief examination of taxes paid by the industry in the period 1971 to 1975, and a consideration of the composition of the current combined rates of taxation on mining, the presentation then addresses itself to a review of the circumstances behind the recent federal-provincial review of resource taxation. This review was, of course, mandated by the Federal-Provincial Conference of First Ministers held in Ottawa on February 13th to 15th, 1978.

In order to help facilitate this government review of taxation, the Mining Association of Canada, in co-ordination with the mining associations from various provinces, developed cash flows for a number of mine models.

These models are based on actual financial and other information that was obtained directly from existing mines. The models were subsequently placed into the existing federal and provincial taxation systems, and the results analyzed.

All the information thus obtained, including the actual data from the mines, the assumptions to the cash flows, and the results of our analyses were then submitted to senior officials at both levels of government.

After a brief review of the procedures and assumptions used in the creation of the mine models, we present some actual illustrations of the many cash flows and mine models, including a comparative evaluation of taxation rates on the same mine models placed into six different provincial taxation systems.

The presentation concludes with a short summary of the main conclusions arising from this exercise, by noting that, (a) the highest combined rates of taxation occur in Manitoba, followed closely by Ontario and then British Columbia and Quebec, followed in turn by New Brunswick and Newfoundland, and (b) that perhaps the single worst irritant to the mining industry in the current federal and provincial taxation systems are the excessively high marginal tax rates found in all provinces we studied.

We regard the elimination of these high marginal tax rates as essential to the overall reform of the taxation systems in Canada.

**Towards the 1980s**—The fundamental challenge now lying before us is whether or not the Canadian mining industry will be in a position to fully participate in and respond to new opportunities expected in the years ahead.

Certainly, the realization of the benefits from these new opportunities, which are likely to emerge by the early to mid-1980s, is by no means assured for the domestic industry, and particularly for our base-metal sector.

At the same time, it is quite evident that many of our present difficulties—serious though they may

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be—are not insoluble. After all, Canada's mining industry, with a proven track record as a world leader, is today still one of the most competitive in the world.

Therefore, if Canada is to continue to benefit substantially from future opportunities in mining, then during the next two to three years, every effort must be made to work together and resolve a broad range of mutual problems.

In this regard, we believe that our first priority should be the successful resolution of those problem areas that are essentially "home-grown" in nature.

(A complete text of this report has been produced and is available as a reference summary from the Mining Association of Canada—Ed.)

**New Brunswick Prospectors and Developers Association**  
by Derek E. McBride

In a previous brief, the New Brunswick Prospectors and Developers Association illustrated to the New Brunswick provincial government that any increase of mining taxes and the implementation of royalties was detrimental to the long term prosperity of the mineral resource industry of the province.

The association maintains this stand. It opposes the increased mining taxes and royalties imposed in June, 1977. Such "taxes" are in fact an additional operating cost and reduce the economic potential of every deposit in the province. Indirectly, this means that there will be fewer jobs, less creation of new wealth and less new tax revenue generated. Such an attitude is difficult to understand as the result can only hinder mineral development and concomitant job creation.

The incentives in the new New Brunswick Mining Income Taxation Act may sound good to the average voter. Who isn't impressed with \$100,000 figures and 25 per cent write-off allowances? But in actual fact, the value is very small, relative to the investment required. For instance, it has been calculated that the tax saving by smelting in the province of New Brunswick has a present value of about 10 per cent of the capital cost of a processing facility. Hardly an incentive to invest \$200 million which has to be borrowed at a rate greater than the expected rate of return. It also should be pointed out that these incentives only apply to mining companies with New Brunswick production. These companies represent only a small percentage of the companies exploring in the province.

The effect of increased taxation on the mineral industry in other provinces is well-known. In British Columbia, after the N.D.P. government passed a heavy taxation act early in this decade, the exploration capital dropped from over \$40 million to less than \$10 million in three years. In Ontario, in 1974, the government felt they could take an additional \$150 million from the mining industry through increased taxes. This amount was, in 1977, \$20 million and investment in exploration has been drastically cut.

The problem with government taxation is that it is based on the most profitable years in a cyclic industry. Today we see what a combination of excessive government taxation and economic conditions have done to what was once a healthy industry. The New Brunswick Minister of Natural Resources said recently (Telegraph Journal, Wednesday, February 15, 1978), that taxation (federal) had impeded development and the situation should be reviewed. The Prospectors and Developers Association maintains that provincial, as well as federal taxation policies, are to blame, and if the politicians are serious about providing jobs, then the policies they implement must encourage investment to create long-term solutions to long-term problems.

In Hon. R.C. Boudreau's reply to our brief, he presented alternatives that showed his concern and

willingness to compromise. For your easy reference, I will list the minister's alternatives:

- (a) Arbitrarily provide relief from the royalty from time to time if this would prevent a mine closure.
- (b) Provide that the royalty would not be payable if the ore reserves are less than, or fall below, seven years production at an established annual rate.
- (c) Have the royalty based on operating profit before interest payments and non-cash expenditures.
- (d) Deposit a portion of the royalty in a fund for use in temporarily subsidizing operations in periods of low prices and phasing out of mines where the ore is near exhaustion or becoming uneconomical to mine.

Considering these points, it becomes clear that policing the claims would be extremely difficult. Who would be the best judge of: the viability of a mining operation; the actual ore reserves; or time to mine closures? Attempts to apply sections "a, b and d" will only result in additional red tape with the associated costs. Only section "c" can be readily calculated from present statement or income and expense figures and as such serves the aims of the government by increasing revenues without significantly increasing costs. The association, however, cannot support the implementation of section "c" under present economic conditions.

**Our Recommendation:** to the Mines Ministers in general, and the New Brunswick Minister of Natural Resources specifically, is that, *mining taxation should be re-assessed with the aim of returning taxes to reasonable levels. The abolition of the "ad valorem" or royalty tax is also recommended.* Until taxation returns to a tolerable level and government policies are realistic, development capital will not be forthcoming from the private sector.

## Ontario Mining Association

by J.E. Finlay

The Ontario Mining Association (OMA) is pleased to have this opportunity of presenting its views with respect to the central theme of your Conference: "Has Canada a Future as a Metal Producer in the 1980s?" The very theme of the conference is, in our opinion, a disturbing one because it calls into question the capacity of our industry to compete in the world market of the future. It is apparent that industry, labour and government have been unable, collectively, to sustain the successful climate which prevailed in the era before the Carter Report.

Obviously, we can't turn back the calendar to the "good old days"; nonetheless, it is useful to remind ourselves that, working together in those times, we were successful in achieving an enviable record in world mining. Canada became the third leading mineral producer among non-communist nations and Canadian technology and ingenuity were sought after by all the nations of the world.

We believe the first step in improving the stature of the industry is to identify the nature of the issues which face us and the actions required to correct them. Along with this, our challenge is to re-establish the initiative, the spirit and the pride of national development which led to Canada's pre-eminent position in world mining.

We submit for your consideration our opinions and comments on some of the issues at stake which are of national concern.

**Taxation**—A great deal has been said about taxation in recent months, simply because any discussion about the health of the mining industry must place this in the forefront of concerns. Government and industry might wish to avoid this matter which at times is potentially abrasive. However, each realizes that inevitably the issue of taxation policies must be faced if policies are to be compatible with economic objectives.

Regrettably, the mining industry still suffers from being caught between opposing federal-provincial interest and from the popular misconception, arising in the early 1970s, that the mining industry could afford to absorb far heavier taxation than it had borne in the past.

The mining industry is encouraged by the fact that legislators now appear to understand and appreciate the essentially cyclical nature of world markets, the extremely unfavourable odds against success in any given exploration project, and the very long lead times required to reach production status. Our encouragement was heightened by the First Ministers' meeting in February of this year and the subsequent announcement that the combined federal-provincial taxation of mining companies would be examined. We appreciate the evidence that these intentions are being implemented in the meetings between federal and provincial taxation and natural resources personnel. We greatly appreciate the invitation, extended to the OMA, to discuss changes to the Ontario Mining Tax Act and its regulations. However, we would be less than honest if we

did not state that we remain discouraged by the fact that there is still so much left to do if we are to improve the industry's status by the 1980s.

The truth is, the next several years of the Canadian mining industry's future have been basically determined by the discoveries already made and by projects which are already on the drawing boards. Consequently, there is an immediate need for bold actions that will cut through the tangle of detailed issues adversely affecting our growth potential.

The operating mines of the mid-80s must be planned for now and this is most difficult, if not impossible, within the present taxation system.

Top priority should be given by federal and provincial governments to the reaching of agreement on a combined maximum rate of taxation of the mining industry. We are convinced that a tax system which is stable and less complicated, one which is based on a flat rate, is necessary to permit long-range planning and restore investor confidence. The imperative is time; the shortness of time at our disposal to make decisions on which our future will depend.

**Social Capital**—The philosophy behind the present attitude to social capital and other costs related to the attraction and retention of labour in mining operations deserves our collective attention. It is one which mining companies feel strongly about and one which can influence the well-being of this industry throughout the 1980s. It would be unrealistic to expect all jurisdictions to approach this subject in the same way, nonetheless, requirements are similar in every jurisdiction.

We simply cannot ignore that provision by industry in an increasing amount, and an increasing degree of sophistication, is required in the area of social, recreational, housing and eating facilities in order to maintain a stable and efficient workforce. The costs related to the requisite facilities are recognized for federal income tax purposes as essential to the process of conducting business in the mining industry. Similar recognition should apply in provincial mining taxation for all companies, regardless of geographic location, in order to do away with inequities and reduce complications in tax administration.

**Exploration**—No consideration of the mining industry in the next decade and beyond would be complete if it did not seriously concern itself with levels of exploration. Adequate exploration demands that the mining industry compete successfully for the investment dollar to locate and develop mineral discoveries. We must do this to offset the natural process of depletion and to provide for projected growth requirements. We must keep in mind both on-site and off-site exploration.

If Canada is going to win its rightful share of projected demand for minerals in the 1980s, it must bid effectively for the exploration dollar now. Without renewed vitality, our reserves will continue to dwindle and we will be living, meagerly, off the scraps from yesterday's exploration efforts.

All of this poses a formidable task, both technologically and financially. It is obvious that funds for exploration will become available from investors only to the extent that planning with a reasonable degree of assurance is feasible. It will not do to provide encouragement to exploration if we do not also extend this to the subsequent steps of development and production. This demand for assurance can only be answered under conditions of political and economic stability and favourable fiscal policy.

Each of the geographical-political areas represented here today will be offering incentives designed to encourage exploration. In order to respond, the mining industry must see that overall, the projects will provide rewards commensurate with the risks.

Therefore, we urge you, as Ministers of Natural Resources, to examine the requirements of a winning exploration formula, seeking answers to such questions as: Who is active, and where? What are they exploring for? What incentives have proved to be effective? What constitutes a healthy overall investment climate? The elements involved may vary for different minerals or for different regions, but the common elements will most certainly include the issues we are highlighting in this presentation.

**Communication**—The mining industry has embarked upon a number of programs to bring a better understanding of the industry to the public, hoping thereby to bring about a recognition of its contributions to society and a sense of balance in the subjects where it has been criticized. While we recognize this matter of communication is the responsibility of the industry, we believe that governments can assist us to our mutual advantage if they are alert to opportunities in which they will be seen as being concerned with the welfare of society as a whole.

**Information supplied to Government**—In the area of communications, there is another important item of concern to the mining industry. This is the provision of information to governments by individual mining companies. It must be recognized that the mining industry is a competitive one, both nationally and on a world-wide basis. For this reason, operational and financial information which might seem innocuous may be quite the opposite. Consequently, we are very seriously concerned about the disposition of such information. We ask that governments, in requesting and handling information, should re-assess its requirements to avoid harm to individual companies. If the information provided is to be used in the compiling of statistical publications which will be available to anyone, then it is necessary to avoid the disclosure of information which would be damaging to the contributor. If the data are to be used for forecasting, model testing or industry projections, it is important that the limitations and special circumstances be recognized. The OMA believes that mining companies want to co-operate and are willing to be open in the transfer of information as long as their problems are recognized and avoided. Discussions between those concerned would serve to develop a better understanding of each other's needs.

**Occupational Health and Safety Legislation**—The importance of occupational health and safety within the mining industry requires more than a passing interest from Mines Ministers, whether it is their administrative responsibility or not. If health and safety legislation is impractical, inequitable, or inef-

fective, then it cannot be of any value, whether from the humanitarian point of view or on the basis of sound economics.

In Ontario, an attempt has been made to bring all industry under one umbrella as far as health and safety are concerned. We suggest that this omnibus approach fails to appreciate the special circumstances that apply to different industries. We also suggest that the legislation has suffered as a result of the political process. The result appears to lack acceptability in every quarter and is certainly of concern to the mining industry. In the industry's view, management is responsible and accountable for the health and safety of its employees, a responsibility which must not be weakened nor made difficult to fulfill by legislation.

Let me review four principles which our Association believes should be kept in mind whenever health and safety regulations are being formulated:

- 1) Health and safety cannot be legislated. It requires commitment, co-operation, motivation and perseverance by management and workers alike, to make health and safety practices effective. For this very obvious reason, legislated relationships and inflexible regulations should never replace voluntary practices which are working well. Self-regulation should be the keynote of the approach.
- 2) Over-regulation should be avoided because it inevitably results in excessive administrative complications with their attendant inertia and waste. We believe that government should participate in the setting of objectives for which labour and/or management establish suitable programs. Direct government involvement in program details should occur only when adequate programs are not being formulated or when reasonable objectives are clearly not being met.
- 3) In this, as in other legislation, our basic civil liberties must continue to prevail. Under no circumstances should legislation be so framed that a supervisor is, in effect, presumed guilty until he proves otherwise. Not only is this the antithesis of traditional justice, but the spectre of serious penalty will erode or destroy the initiative of the very people on whom much of our health and safety performance directly depends. Control measures should treat government, labour and management with equality, particularly in the matter of access to the courts.
- 4) The use of guidelines rather than legislated standards should prevail whenever possible. As objectives, guidelines permit government, industry and labour to work together towards the attainment of the most practical technological solutions. Legislated standards, on the other hand, are legal requirements frozen and inflexible because of their status as law. Standards must be practical in terms of existing knowledge and technology and cannot readily be adapted when these criteria change. Health hazards cannot be ignored. In cases where valid data exists, standards can be legislated. However, the implication that a standard marks a boundary between safe and unsafe conditions is obviously not true and thus is a most arbitrary basis for imposing penalties, or burdens in the form of the costs of conforming to the standards. In the absence of comprehensive and convincing data, guidelines should be used.

To cite just one example, the Ontario Mining association strongly objects to the proposed standards for silica of 0.1 milligrams per cubic metre and 0.05 milligrams per cubic metre for silica flour in respirable dust. We believe that there is no valid data to support the adoption of such stringent limits.

Unfortunately, Canadians are too eager to accept unquestioningly the positions put forward in the United States, often placing more weight on these positions than do the Americans themselves. Our Association holds the view that we in Ontario have the best data in the world from which to make accurate assessments of the hazard from silicious dust. Dr. David Muir, a recognized British epidemiologist whose views are known to the Ontario Government, supports this opinion. His proposal for research related to airborne quartz has been found acceptable by the OMA who agree with Dr. Muir that he proceed with the pilot phase.

**Environment**—A practical and balanced approach is necessary in environmental matters. Here also guidelines and objectives established in consultation with industry are preferable to unrealistic objectives established in isolation from the realities of the particular circumstances. Since this view is not unanimously shared by the public at large, there is a real need to convey the understanding that legislation which is punitive or unenforceable merely creates problems and delays. It increases the cost of enforcement while diminishing our ability to compete in the global marketplace.

Our Association believes that the involvement of industry in the formative stage of legislation is far better for all concerned than reaction after the fact. Given the opportunity, industry has a great deal to contribute. A good example of this was the participation of the OMA in the formulation of Guidelines for Environmental Control in the Ontario Mineral Industry. In another instance, the objectives of Bill-38, the Federal Fisheries Act, might well have been achieved in a form acceptable to all jurisdictions and industries if the co-operative approach had been maintained and allowed to proceed to its logical conclusion.

**Interprovincial Energy Grid**—The Canadian mining industry must take advantage of every opportunity to reduce its operating costs if it is to maintain a competitive position. The industry has traditionally been a heavy consumer of electricity, and the cost of this energy is escalating rapidly. Consumption of electricity is increasing due to a combination of factors which can be only partially offset by conservation measures.

A lowering of these energy costs could be effected by creating more opportunity for the sale of excess power and a reduction of spinning reserves. This could be accomplished through extensions, not only southward to the United States, but also to the east-west electric power grid systems. The OMA advocates the examination of this possibility with a view to taking advantage of Federal subsidies for intra-provincial transmission line costs.

**Conclusion**—In responding to your challenging question, "Has Canada a Future as a Metal Producer in the 1980s?", we have concentrated on the aspects of our industry's present status which we believe are of concern to all.

The answer to the question inherent in the theme of the conference must be affirmative because we have everything to make it so, providing that we can do our long-range planning with the assurance of

stability and of reason prevailing in the areas that we have reviewed today. To accept a negative approach would mean the sacrifice of our standard of living, if not a major upheaval while re-establishing a basis for economic survival.

We are very gratified that our own Mines Minister and his staff have shown in their documents relating to overall policy, in speeches and by their actions, that they are supportive of conditions required for the well being of the mining industry.

We greatly appreciate this opportunity of placing our views before the Provincial Mines Ministers and others assembled here.

## Pamour Porcupine Mines, Limited

by D.E.G. Schmitt

Canada has been a substantial producer of gold for some 80 years. Mine production at the rate of 1.35 million ounces in 1900 was almost 10 per cent of world gold production in that year.

Our output declined to less than a half million ounces by 1907, or less than three per cent of world production, but that down trend was reversed in 1912 and Canadian production climbed steadily toward three million ounces per year in the early 1930's. With the price increase from \$20.67 per ounce to \$35.00 in 1934, the miners were encouraged and more than five million ounces were produced in each of the years 1939 to 1941, as Canadian output accounted for more than 12 per cent of world production.

Then, there was an understandable drastic decline in production during the war years. But with the return of miners to their former jobs, an annual production rate of some four million ounces was soon re-established rising to 4.7 million ounces in 1962. By then, post-war inflation and rising costs for labour, supplies and services, relative to the fixed flat price for gold, had more than offset Emergency Gold Mining Assistance, relief which had been introduced in 1948 to achieve an orderly phase-out of gold mining communities.

Production declined steadily each year until, in 1977, Canada's total output from basic and byproduct sources was down to 1,680,000 ounces, about four per cent of world production.

In 1968 some evidence of opportunity for a rise from the regulated, flat, fixed price of \$35.00 per ounce became apparent. In 1971, the market price began to take off. You also know that when the price had risen to more than \$195 per ounce in December, 1974, auction sales of gold by the U.S.A. and announced auctions by the International Monetary Fund drove the price down to less than \$105 within 20 months (August, 1976).

Thereafter, despite continuing sales by auction from the U.S. Treasury and the I.M.F., the price has responded to increasing industrial interest and usage and to the new ready availability of gold as a commodity in world markets. Within the past two years, the price has doubled and the current "equilibrium price" appears to be in the range of \$200 per ounce.

Although ranking third in the world after South Africa and the U.S.S.R., Canada's production of gold is still declining. Our output is only about four per cent of current world production which, having peaked at 47 million ounces in 1970, has since declined to 38,490,000 ounces in 1977. Canadian gold production in declining order of magnitude comes mainly from Ontario, Quebec, the Northwest Territories and British Columbia.

You are aware that the gold discoveries in the latter years of the last century and the early 1900s set the stage for the establishment of communities, roads and services in central B.C., in the Yukon and Northwest Territories, in Red Lake and the

Porcupine areas, in Kirkland Lake, Rouyn, Malartic, Val d'Or, central Manitoba and many other locations which became the northern bases for continuing exploration and development.

Gold led the way to the eventual establishment of many mines and facilities for the economic extraction of nickel, copper, zinc, lead, iron, uranium and other basic mineral constituents from the hard rock formations of the north.

You've noted the recently increasing popularity of gold in jewellery, in coins, in commercial and industrial usage (2,500 ounces in the windows of the Royal Bank Building at Front and Bay Streets).

Perhaps you are aware that the Gold Institute, L'Institute de l'Or, a world wide association of suppliers of gold and gold products was organized and established only two years ago on the basis of the faith, determination and limited funds of a handful of Canadian gold miners. That institute is providing technical information leading to increased usage of gold in industry and in coinage. It is growing!

You have noted in the news media recommendations to the federal government that Canada begin, at an early date, the production of high quality gold bullion coins. The forecast of demand for one ounce and half-ounce legal tender bullion coins is estimated to grow from 1.5 million ounces to three or four million ounces per year within a relatively short period. The impact of sales in that range on the Canadian economy and on our balance of trade accounts requires no elaboration.

You may know that there were 122 basic Canadian gold mines in operation in 1949 and that number has dwindled to 23 in 1977, 13 of which accounted for most of the basic production. Unfortunately, the proven reserves of gold ores in Canada have declined accordingly and there is an urgent need for reactivation of the search to replenish our inventory.

In all of this we see an opportunity for Canada and each of the gold-producing provinces. Gold is unique, not only in its noble and romantic characteristics, but also in its very broad and erratic occurrence in nature, and in the fact that no sophisticated geophysical technique has yet been devised or developed to identify concentrations of it in the ground, or elsewhere, by airborne instrument survey procedures. Gold is still "where you find it".

While it has been subjected to over-regulation of markets and price by governments and international agencies at all levels, it is still a fair target for the prospector, the man with a grubstake, a rock hammer, a pick and a pan. The tonnages and grades required to replenish our inventory will be confirmed only by following the surface indications underground, by drifting, drilling, sampling and assaying in the course of a well-conceived and carefully planned program.

There is no magic in it. There is plenty of gold still to be found in Canada, but it will require hard work and money.

The best efforts and intentions of the prospectors

and gold miners over the past 25 years have been largely thwarted by over-regulation, a lack of understanding by politicians and elimination of incentives. But the romance of gold as a unique and precious prize at the end of the rainbow has not gone. The obscuring clouds can be lifted.

**Recommendations:** There are two specific actions that can be taken by any, each, or every minister who has responsibility for maximum sound economic utilization of our natural mineral resources and is concerned with the maintenance or extension of employment in the area of his jurisdiction.

1) *A full-out best effort to abolish the capital gains tax in Canada.*

The Minister from New Brunswick and the Provincial Mines Ministers recommended removal of the capital gains tax on securities of mineral exploration companies and on the proceeds to prospectors from the sale of mineral properties last February. Of all the taxes that have contributed to the decapitation of individual initiative and enterprise, the one on capital gains is the most damaging in a time of inflation.

It is generally acknowledged, even in government offices that the costs of administration and collection exceed the revenues derived from the Capital Gains Tax. This is the time to abolish it.

2) *Allocate some part of your Department's budget to fund low-interest or interest-free loans for the implementation of well-conceived underground exploration programs on gold prospects of obvious potential and economic merit.*

The direct cost of creating jobs and expanding the economic and employment potential in this way is likely to be more reasonable and productive than is the current competition on an international basis to subsidize the capital costs of automotive manufacturing plants by using taxpayer's money.

The cost of one man-year of unemployment has been reliably estimated to be \$4,500 at the provincial level and \$8,000 at the federal level.

Surely this is an appropriate time to fund potential job creating development aimed toward the re-establishment of a viable gold reserve for the national mineral resource inventory.

## Prospectors and Developers Association

by E.G. Thompson

This brief has been prepared as a background for discussion at the 1978 Mines Ministers Conference. As a national association we have kept most of our comments general in nature in the hope that most of the Ministers from mining provinces will participate in the discussions and will realize the national effect of their provincial policies. We also hope that the Ministers will take this opportunity to discuss with industry and their fellow Ministers any new programs they have or new ideas to aid the exploration-mining industry.

Although the P.D.A. represent all phases of exploration across Canada, from prospectors through to the major companies, we stress the problems facing the smaller exploration unit. We are very concerned over the recent trend in exploration in Canada whereby most of the exploration work is being done by foreign oil companies, foreign governments, foreign utilities and various Canadian Crown corporations and quasi-governmental agencies. Although the explorationists are grateful for the jobs provided, we believe that it is an extremely short-sighted and dangerous policy for Canada to have new mining operations concentrated in these groups.

The Prospectors and Developers Association and other mining associations have made innumerable briefs to various levels of government in the last five years; all the comments and recommendations have undoubtedly been previously iterated and many of you have replied why you can't or won't act on these various recommendations.

In general, industry has no major reasons for complaint about our various departments of mines. Our system of geologic, topographic and aeromagnetic mapping, our land tenure regulations, our assessment records, our exploration and mining regulations and most of the other areas under the direction of the various departments of mines are the best in the world. Of course, improvements are always possible and we have made many recommendations in recent years.

The ironic part of the whole exercise is that, for the most part, the Ministers in charge of mining have little influence on many of the areas that cause us the most trouble. For example, in the provincial governments, the finance department controls taxation matters, consumer affairs controls the stock exchanges, environment partially regulates environmental matters and other departments regulate other problem areas. The various federal departments control taxation, foreign investment, export regulations, environment regulations, and, outside Canada, worldwide conditions dictate the supply and demand for metals, lower foreign wage rates, foreign government subsidization and other matters that create problems for the Canadian mining industry.

So firstly, we would like to make some recommendations in the areas over which you have some control, followed by some recommendations in areas

under other provincial Ministers where you have lesser control, and finally, some points for the federal government where you have virtually no control.

### **1. Areas partially under control of Mines Ministers Recommendations-**

(a) **Keep the land open for competitive exploration.**—A number of our members are concerned with the withdrawal of land for prospecting purposes. Specific areas of concern are the withdrawal of large areas in northern Quebec that were given to the James Bay Project, the proposed withdrawal of other areas in Quebec for airborne surveys, large areas in Nova Scotia (50,000 claims) that were withdrawn via map staking by a major oil company, and large concessions in other provinces. These large land withdrawals eliminate competition and often discourage active exploration. Our members are also very concerned about the tremendous land withdrawals (especially in the Yukon and N.W.T.) for parks, Indian land settlement, wildlife preserves and various other reasons. Prior to establishing additional national and provincial parks and other wilderness reserves, comprehensive resource evaluations should be carried out. We strongly believe that mining and provincial parks are compatible and that large land withdrawals are for the benefit of a few select people and do not benefit the average Canadian citizen.

(b) **Legislate some sensible and consistent environmental regulations.**—In North America we are in the era of the environmentalists and all the Ministers know well how sensitive and vulnerable we all are to these issues. Some of the concerns are real, some are imaginary. Many of these issues are picked up and distorted by the media. This attention creates public reaction and encourages governments to "do something" before they have all the facts and we end up with conflicting and arbitrary regulations. Delays and additional costs caused by expensive environmental and safety problems can change ore to waste. New uranium mining operations in Canada now have to go through from nine to 12 different agencies (depending on the province). The mining of uranium ore has been going on for 25 years in northern Saskatchewan. Yet suddenly new developments are delayed for a Bayda Commission to decide if additional uranium mines will be permitted. Surely we should be able to come up with a Canada-wide set of sensible regulations and not have every province plus the federal government go through this expensive and wasteful process. Perhaps the departments of mines can provide some coordination and guidance for companies who have to comply with various sets of regulations.

In our brief to the Ministers at the Federal

Provincial Mines Ministers Conference in January we pointed out that two of the greatest health hazards to Canadians by several order of magnitude are tobacco and alcohol. These two commodities create more health hazards, cause more deaths and create more destruction every day than all mining activities would do over centuries. It is ironic and somewhat hypocritical that the same governments that require extremely low limits for many elements (asbestos, lead, nickel, radon, sulphur, etc.) that may cause health problems, at the same time permit and even encourage the distribution of alcohol and tobacco products. As we said before, we are not suggesting that we should not look after the environment and the safety of our workers. We are saying, "Keep a proper perspective, consult with other provinces and jurisdictions and come out with some sensible and realistic guidelines".

(c) **In large Ministries which include mining, appoint at least a Deputy Minister of Mines.** Again, as we recommended last year, we suggest that if your government believes mining is important, the department of mines should be in a ministry where it constitutes a significant division. This is already the case in half of the provinces. In departments such as Ontario's where mining constitutes only some 4 per cent of the Ministry, a Deputy Minister should be appointed to head up the division of mines and communicate with industry.

(d) **Maintain communication with industry and the public.**

Firstly, we commend the governments who are making some effort to tell the story of mining in their provinces. We urge more provincial governments to participate in these endeavours. Special attention is needed to correct many apprehensions about uranium mining.

Secondly, we urge you to continue "open house" sessions that many of you are now operating and suggest you use this opportunity to talk to industry and determine the types of reports, maps and information that are of use to us. More attention should be paid to getting geologic reports in print as soon as possible (not five to 10 years later, as most of them seem to be).

(e) **Do not make government participation in exploration compulsory** (preferably, do not allow any government exploration).—

We have previously gone on record as strongly opposing compulsory government participation in exploration projects and listed a number of reasons. We would like to re-iterate our opposition and state that in our opinion private exploration groups are more efficient, hard-working and experienced than government organizations in exploration and are the best people to find new mines. However, if for political or other reasons you feel obliged to spend the taxpayers' dollars on risky exploration ventures, it should be done through Crown corporations such as Soquem. These corporations should not be privy to inside information and should obey the same regulations and pay the same taxes as the mining companies.

(f) **Strive to achieve greater uniformity of mining, regulations, taxes and pollution standards.**—

This important areas was discussed in last

year's meeting and bears repeating. Our industry is faced with a bewildering array of continually changing rules and regulations for 11 different jurisdictions. The benefits to both industry and government of standardization are self-explanatory and we urge you to continue your efforts in this direction.

Many of the provinces are in the process of updating their antiquated mining regulations and we have participated in their discussions. In some cases their new proposed mining acts have been dragging on for long periods of time and we recommend that they be finalized.

## **2. Matters under control of other Provincial Ministries**

### **Recommendations:-**

(a) **Legislate a stable, reasonable mining tax.**—

One of the most important factors in restoring the vitality of the mining industry are taxation policies and provincial mining taxation policies can do their part. For the last decade we have been faced with a bewildering array of changing taxation policies in 11 separate jurisdictions. We fully support the MAC proposal calling for an agreement between the federal and provincial governments for a uniform definition of taxable mining income in Canada and that the combined tax rate on mining not exceed 45 per cent net of resource allowance.

Other taxation matters are discussed under the federal section.

(b) **Encourage and facilitate the raising of risk capital.**—

For many years now we have been noting the decline in the number of junior mining companies. We stressed that this sector was responsible for much of the innovation, imagination and the discovery of new deposits, and that their demise had very serious long-term implications for the mining industry. The trend towards control by foreign oil companies, foreign governments, foreign utilities and government and quasi-governmental agencies is detrimental to the long-term vitality of the mining industry.

Two recent reports on the junior mining industry carried out under the auspices of the Ontario Ministry of Natural Resources have completely confirmed all our statements. An integral part of the junior exploration unit is the stock market and the ability to raise risk capital. Many factors have combined in recent years to the demise of the junior mining market (capital gains taxes, the unfavourable mining environment and restricted securities legislation).

We need positive government action to correct the impression held by the average Canadian investor who believes that one or more levels of government will skim off most of the profits and/or create enormous operational problems for any new mining venture so that any potential new mining venture will not be an attractive investment.

We urge the Ministers who have provincial counterparts with some control of the equity market (Ontario, B.C., Quebec and Alberta) to make every effort to get the risk capital markets operational again. We certainly hope that the new Minister for Ontario will continue the plans of his predecessor, Frank Miller, and establish a "modus operandi" for raising speculative exploration funds.

### **3. Matters under control of the Federal Government**

The following items are principally those areas under the control of the federal government. We have made representation to Ottawa on these matters and urge that you consider them carefully and, if you agree that they are significant, make similar representations.

#### **(a) Come to an agreement on combined federal-provincial taxes.-**

As discussed previously, this item is of prime importance in mining and is a federal-provincial matter. It is important because:

- (i) long-term planning is required for mining projects as the time frame from exploration to development to mining to return of capital is from 10 to 20 years;
- (ii) exploration expenditures can only be justified if the investors can have the possibility of making an excellent after-tax rate of return in case of success.

The effective tax rate in most Canadian jurisdictions is substantially higher than for most States in the U.S. A comparison of an operation with income of approximately \$50 million per year showed total tax rates of 59 per cent for Ontario, 57 per cent for B.C. vs 47 per cent for Utah and 28 per cent for Washington.

A stable, reasonable tax rate is essential if we want to attract the Canadian public into investing in long-term, high-risk exploration and mining ventures.

#### **(b) Eliminate capital gains tax on junior company shares.**

Present capital gains tax is a major inhibitor to Canadian participation in the raising of risk capital. The tax is a nuisance to the investor (bookkeeping records) and probably costs the government money to collect and administer. We recommend that serious consideration be given to eliminating this tax on shares under some level (\$2.00). However, if capital gains taxes are to be retained, there should be more relief due to the time period held and inflation. In addition, capital losses should be treated in the same way as capital gains (full inclusion in the year of loss at the taxpayer's option).

#### **(c) Extend the present 100 per cent deductibility of exploration expenditures for at least five years from May, 1979 and increase to 150 per cent.**

The present 100 per cent deductibility of exploration costs from income for tax purposes has been very effective in stimulating oil and gas exploration, but hardly is used in mining exploration because of: (a) the higher risk involved in mining; (b) the longer time frame from exploration to production; and (c) the very different characteristics of the two businesses (i.e., farm-ins on semi-proven production).

The flow of tax dollars from West Germany into uranium exploration, as well as other businesses, is the result of generous write-off provisions by the West German government, and the domination of Canada by U.S. companies in the risk businesses was the result of favourable taxation policies in the U.S. If we are to have some Canadian mineral companies we need a more attractive tax treatment of risk capital.

#### **(d) Keep government expenditures in line and keep our cost structure competitive. (This recommendation applies to the provinces, too.)**

Canadian capital and operating costs and Canadian taxes have risen to close to the highest in the world. Social welfare programs have reduced the incentives to move to areas where jobs are available and have made labour scarce and expensive in most mining areas. Government wage rates, indexed pensions, generous holidays and allowances have helped to raise the public's expectations to uncompetitive levels. It is essential for a healthy mining industry and, in general, for a healthy economic environment in Canada that government expenditures be held in line and that our cost spiral be halted.

#### **(e) Reduce income tax rates for people living in remote, inhospitable, high-cost areas of Canada.**

One method of helping to keep costs competitive with other industries in Canada and in other countries would be to reduce the income tax rates for people working in remote, inhospitable, high-cost areas. We believe that this measure could help to maintain a more stable work force and help stimulate the economy of these areas. The federal government should certainly refrain from taxing essential benefits to employees of firms in remote areas such as board and lodging, educational allowances and travel allowances.

#### **(f) Stop financing competitive mining ventures through E.D.C. and other government agencies.**

Our Association and many other mining associations are strongly opposed to the generous financial arrangements via E.D.C. and other government agencies. The recent proposal for a billion dollar financing of a copper deposit in Panama is a good case in point. At a point in time when Canadian mines are facing layoffs and shutdowns and new developments are impossible to finance, we believe that any assistance forthcoming should go to Canadian companies. This project is even more sensitive, as it was expropriated from the Canadian company that originally found and developed it.

We would suggest that the government consider similar restrictions as those being considered by the U.S. on the role of the Export-Import Bank. Among the restrictions being considered are the following, which would forbid the Bank to extend financing to projects which would:

- (a) Produce products which are surplus in the United States,
- (b) Produce products for which excess domestic capacity exists, and
- (c) Produce goods in excess of world demand.

**Conclusion**—We thank the Ministers and their aides for considering our recommendations and we trust that some beneficial measures will be forthcoming as a result of these meetings. Our comments were frank and direct and in the spirit of co-operation in the hope that we can improve the working environment of both industry and government. We have the finest system of mineral management in the world and the most efficient, technically competent minefinders, also. It would be an act of complete irresponsibility to permit our system to vegetate and sink into a morass of bureaucratic regulations and mediocrity. The Propsectors and Developers

Association is committed to improving conditions in the mineral industry and is ready, willing and able to participate with any government agency at any time. By working together we can continue to keep our industry and our standard of living the envy of the world. Thank you.

## **Proposal for Mandatory Filing of Mineral Exploration Data and Their Public Disclosure**

by Paul S. Seiferling

There has been much geological, geochemical and geophysical data acquired throughout Canada in the past 30 years, much of which has not been retained or is not available for public or governmental reference. This information is a valuable resource which has been costly to obtain and has been either lost forever when companies leave the business or languishes in dormant company files. It is suggested that Canada could profitably utilize such information by releasing it to industry and the public by means of modest amendments to existing Mining Acts and Regulations.

*This proposal strongly recommends that it be mandatory for the Canadian minerals exploration industry to file complete data covering all minerals exploration programs throughout Canada. The data would be retained in governmental repositories to ultimately be released to the public. It is our opinion that industry would presently be receptive to such a requirement.*

This proposal would benefit the many government agencies involved in evaluating Canada's mineral resources by insuring that data be available to their technical analysts and hence, would enhance the value of future governmental publications of mineral inventories and potential.

This proposal would benefit the mineral exploration industry by establishing a more complete public data bank thereby decreasing wasteful duplication in exploration programs and ensuring a better quality of programs based on more complete data. Industry's concern regarding competitive advantage and confidentiality could be allayed by establishing a reasonable period of confidentiality following filing of the exploration data and their release to the public.

Current assessment work files in government offices are at best incomplete. In many cases, only minimal data of exploration programs, sufficient to conform to the required statutory work obligations to hold the mineral title, are filed. It is common practice not to file, particularly if results are negative or inconclusive. Many exploration programs are of a preliminary, reconnaissance nature and if results are not of economic interest and do not lead to land acquisition the data is seldom filed with government.

Deficiencies in exploration assessment work files are most notable with respect to chemical analyses and logs of drilling. Diamond drill core, drill cuttings and their chemical analyses provide concrete, positive geological data as compared to the more vague geochemical geophysical data. It is clear at the present time that a significant amount of drilling data is not submitted to regional government authorities. Most drilling is performed by a relatively few contractors most of whom belong to a national association which keeps accurate records of drilling statistics in the industry. Hence, it would be a simple procedure to monitor such drilling activity throughout Canada and to compile accurate drilling data.

The summary presented below identifies the

assessment reporting and disclosure requirements with respect to drilling activities within the various political jurisdictions throughout Canada. It is apparent that most jurisdictions require filing of drilling data only when assessment credits are required to maintain mineral lands. Some jurisdictions do not require the total data such as analyses when work is filed. Regulations governing disclosure vary according to jurisdiction and in several provinces drilling information may be kept confidential as long as the lands are retained.

Regulations regarding drilling information have been selected as an example of non-uniform jurisdictional requirements which allow much valuable geological data to be lost. Geophysical and geochemical information is also lost because of similar regulations which do not compel industry to file complete exploration work results.

It is suggested that it be mandatory for industry to file complete results of all exploration and development work performed on both acquired lands and Crown lands. Governments can monitor exploration programs throughout Canada through statistics maintained by the exploration contracting industry including geophysical surveying and diamond drilling companies. A statutory declaration by a professional engineer, geologist or geophysicist would accompany each report of an exploration program. Reports would be filed annually and public disclosure would be made three years thereafter, except in the case of surrender of lands in which case release of data would be immediate. Retroactivity—perhaps three years from adoption of the principle of complete disclosure of complete information—should be considered.

The Ministers are hereby respectfully requested to consider the establishment of a committee to investigate and recommend an acceptable procedure for the reporting and maintenance of all exploration data.

*Summary of assessment reporting and disclosure requirements with respect to drilling activities within the various political jurisdictions throughout Canada.*

This summary should not be construed as an accurate statement of the law, but rather a comparative precis.

**Northwest Territories:** Reporting requirements—Evidence of diamond drilling shall consist of "...complete drill logs and assay of core or sections of core in duplicate and if no assays are provided, the reason for their absence...". Public disclosure—after three years following expiry of mineral lands.

**Indian Reserves (except B.C.):** Reporting requirements—Format of assessment report is "a summary of the work that has been done under the permit and the most recent extension thereof and a summary of the work that the permittee proposed to do if the permit is extended. Public disclosure—immediately following expiry or surrender of lands.

**Yukon:** Reporting requirements—"detailed state-

ment of work"—but doesn't specify. Public disclosure—no confidentiality clause.

**British Columbia:** Reporting requirements—Evidence of diamond drilling "...for diamond drill holes clearly legible copies of drill core logs for all drilling submitted for credit...all minerals noted in core must be listed in the logs...where assays of core or cuttings are done, complete assay results must be submitted along with the logs...". Public disclosure—after one year following filing of work.

**Alberta** (proposed regulations): Reporting requirements—"Expenditures upon the following activities, when carried out for the purpose of exploration, and development within the area of a permit shall be credited as expenditures...prospecting...drilling...". Public disclosure—after one year following termination of permit except such data determined by the Minister, which will be disclosed 1 year after filing of work.

**Saskatchewan:** Reporting requirements—for evidence of work..."...location of core storage, complete diamond drill logs and assays of cores, and if no assays are provided, the reasons for their absence...". Public disclosure—immediately following expiry or surrender of lands. After six years following filing of work.

**Manitoba:** Reporting requirements—"...the following may be submitted for credit...drilling...a map on a scale not smaller than 1:12,000 showing collar location and horizontal projection of each hole...complete drill logs with results of all assays and submission of core if required...". Public disclosure—immediately following expiry or surrender of lands.

**Ontario:** Reporting requirements—"...the report shall be accompanied by a core log in duplicate indicating the footages of the rock type encountered, and the angle and direction of the drill hole, and by a sketch or plan in duplicate fixing the location of the drill hole in relation to the corner posts of the claim". Public disclosure—No confidentiality clause. Procedure followed is disclosure following expiry or surrender of lands.

**Quebec:** Reporting requirements—"...the drill log shall likewise indicate the depth and length of each of the sections assayed and analyzed, together with all the results obtained and the geophysical and other data gathered." Public disclosure—No confidentiality clause. Procedure followed is disclosure following expiry or surrender of lands.

**New Brunswick:** Reporting requirements—Evidence of diamond drilling shall consist of "...complete diamond drill logs and assays of cores and if no assays are provided the reason for their absence, and logs signed by the person who logged the core". Public disclosure—No confidentiality clause for work done on staked claim. Procedure followed is disclosure following expiry or surrender of lands.

**Nova Scotia:** Reporting requirements—As for New Brunswick. Public disclosure—After two years following filing of work claimed for assessment credit. Disclosure of excess work following expiry or surrender of lands.

**Newfoundland:** Reporting requirements—Essentially the same as for New Brunswick and Nova Scotia. Public disclosure—After three years following filing of work. After expiry or surrender of lands.

**Prince Edward Island:** Reporting requirements—"...satisfies the Chief Officer that such work (drilling) has been done, by an affidavit of the person...setting out a detailed statement of the work...". Public disclosure—No confidentiality clause regarding mineral exploration data.

## United Steelworkers of America

by Stewart Cooke

Our brief will be a summary of our views about the priorities for your meeting today. As Canada's principal miners' union representing more than 60,000 mining employees, or nearly seven out of every 10 employees in the industry, our union's policies, practices and achievements should be well-known to you.

Important breakthroughs in the field of compensation (for radiologiacal lung cancer in uranium mines, for "whitehands", and laryngeal cancer in smelter workers) have influenced the policies of compensation boards across the country and were developed by our union's members.

Our bargaining achievements have set goals for tens of thousands of other workers outside this industry. Our union negotiated the first employer funds for mining health research (at Inco in 1975). We negotiated the first contract language (in the 1940s) requiring corporations to share with workers the data on potentially hazardous chemicals in the workplace atmosphere.

Our union's Canadian policy conferences and regional conferences have focused national attention on such important issues in the mining industry as training, certification, safety and retirement, as well as political matters, including resource taxation. Our union helped start the first complete certification program for mine workers (in Manitoba in 1975). We negotiated contract language to recognize the importance of a safe environment outside the mine and the smelter (with Cominco in 1970). In short, the Steelworkers are an integral part of the mining industry, and so it is totally proper that our views be expressed here and that our opinions be given consideration in your meeting.

You certainly recognize, as we do, the critical role of minerals in the Canadian economy. About one-quarter of our exports are in minerals, more than four per cent of the country's wage bill and over three per cent of its employment. Mining counts for a lot in Canada, but we are afraid it is counting for a lot less than it should. Three things concern us most: job security, investment policy and the environment.

**JOBS**—Our union has lost thousands of members in the past 18 months through lay-offs and mine closures. This list is only partial: the massive cut-backs in Inco at Sudbury, Port Colborne and Thompson, cutting more than 3,500 from the employment rolls; the closure of the Marmaraton Mine near Peterborough, Ontario; the closing of United Asbestos in Matachewan, Ontario; the phase-out of mining at Cominco's H.B. mine in Salmo, B.C.; the winding down of operations beginning in a few months at both of Atikokan's two iron-ore producers in north-western Ontario, Caland Ore and Steep Rock Iron Mines; the decision to end mining at American Smelting and Refining in Buchans, Nfld. next year and the closing early next year of Craigmont Mines, in Merritt, B.C.

There has been no response from the provincial governments to these shutdowns and cut-backs.

Ontario appointed an all-party committee of the Legislature to probe the Inco and Falconbridge layoffs, and the companies went right ahead and did as they pleased.

Marmaraton Mining was permitted to close with over a year's production left in the ground, never to be recovered. Atikokan will be left with more than 1,000 out of work while 60 miles away recoverable iron ore will lie unexploited (because Steep Rock and its parent, Canadian Pacific, have decided not to proceed with the Bending Lake project).

**Our recommendation:** *Stronger employment standard laws are necessary to require severance pay, to require corporations to find new work for employees before exterminating their present jobs, to require re-location pay and re-training at the companies' expense. We must pass back to those responsible more of the cost of unemployment.*

One reason unemployment is so high in this country is that investment decisions are entirely in the hands of people without political accountability to the public at large. Look how Inco has "de-invested" in Canada over the past decade while building a nickel empire across the globe.

Inco's capital expenditures were \$131 million in Canada in 1967 and \$15 million in other countries. In 1976 Canadian capital expenditures were \$90 million while foreign expenditures totalled \$369 million. In fact, in the four years from 1967 to 1970 Inco spent nearly five times as much money inside Canada as outside (\$638 million versus \$131 million). But in the four years from 1973 to 1976, Inco spent almost three times as much outside Canada as within our borders (\$738 million versus \$284 million). And this is but one company, setting a trend for the rest.

Inco's overseas ventures will commit the company to sell nickel from its properties in Guatemala and Indonesia before Canadian nickel. The result is unemployment for Canadian miners and a loss of export revenue for the country. The decisions was not made in Parliament, but in Inco's boardroom, without a Canadian politician, worker or small investor present.

Dollars made in Canada should be put to work in Canada. In almost 50 years of operation in Sudbury, Falconbridge has yet to build a refinery in northern Ontario or anywhere else in this country. It's time to make it more expensive to export ore and jobs than to keep Canadians at work. The Ontario government study "Towards a Nickel Policy for the Province of Ontario" recommended that instead of shipping the platinum group metals to Wales that Sudbury Basin metals be refined here. It recommended importing technical and manufactruing expertise to Sudbury for economic diversification in the north (such as batteries) and that iron pellet by-products of the nickel smelting process be used for a "mini-steel" mill in Sudbury. We endorse these ideas.

**Our Recommendation:** *The provinces, together with the federal government, control*

investment decisions and the export of Canadian minerals to guarantee a fair share of work in secondary industry for Canadian working people.

Not the least of our concerns this year is the environment. We know that pollution costs, either to contain it, remove it or clean it up. The question isn't whether pollution must cost, but who pays? Today, pollution costs the public more than it costs the mining corporations. The cost of pollution-abatement equipment is a tax-deductible expense—the public pays half the price because each dollar spent represents 50 cents less in taxes (at the 50 per cent corporate bracket).

The Reed Paper decision and the Inco sulphur dioxide decision in Ontario represent a lack of backbone by government that will shift again more of the burden of clean-up, bad health and environmental degradation onto the public. Can sulphur dioxide be eliminated as a problem? The process patented by Sherritt Gordon and used at its plant outside Edmonton produced fertilizer from copper, using Manitoba copper and a pressurized ammonia leaching process, that produces little pollution. Inco sends its SO<sub>2</sub> out of its stacks; Sherritt produces tens of thousands of tons of fertilizer instead.

**Our Recommendation:** *No relaxation of environmental standards for the mining industry and tougher enforcement of existing legislation to control harmful emissions from refineries and smelters and to curtail the danger to lakes, drinking water and rivers from tailings and other mine waste, dumps.*

We are not afraid of the "jobs-or-pollution" argument. We do not believe that is the choice at all. We believe the companies are using economic blackmail to evade their responsibilities and that governments should hold firm and not be panicked.

The critical role of the mining industry in Canada requires you to be firm about pollution, about job security, about investment policy, not to be pliant and obsequious when you face corporate power. Keeping the pressure on will require investment in pollution control and could result in the birth of technology that will produce new employment opportunities. Taking a firmer hand in guiding investment, especially to require more processing and refining, will help shape a better economy with our natural resources and minerals at the cornerstone of a new economic strategy.

If your governments change your policies and pursue these policies, you can depend on the support of our union. Thank you for the opportunity to share our views with you.

## **Committee reports and recommendations**

## **Rapports et recommandations des comités**

## Committee No. 1 Technical

Chairman: P.E. Grenier  
Co-Chairman: R.E. Hanusiak

### 1. Reports of New Legislation

#### British Columbia

##### A new concept has been introduced in the Mineral Act Regulations called Portable Assessment Credits (PAC).

It is an attempt to encourage industry to submit additional technical information by providing some financially attractive incentives. PAC applies only to geological, geophysical, geochemical and drilling reports and not to "physical" work or to prospecting.

**PAC Deposits:** Upon approval of technical reports, the value of the work requested to be applied to the claims as designated on the statement of exploration and development approved excess technical work will be applied to the PAC account as designated on the statement of exploration and development. No recording fees are paid for work applied to the PAC account.

**PAC Withdrawals:** PAC credits may be used for assessment work credit on the following basis: Upon submission of a further technical report, up to 30 per cent of the value of the approved work on the statement of exploration and development may be taken from the owner's PAC account and added to the work value to make up the total value of work requested to be applied to the claims. Recording fees must now be paid for the work withdrawn from the PAC account.

**Recording Fee Funds:** There could be a tendency to build up a large surplus of work in the PAC account, if this is the only way that the account could be used. Therefore, it was felt that there should be some means of reducing this amount other than by applying work on the 30 per cent basis. The method that was arrived at was to permit refunds of recording fees for work recorded in each calendar year on a basis of \$5.00 refund for each \$100.00 reduced from the PAC account. Upon submission of original mining receipts along with a refund application signed by the PAC account depositor, assessment work recording fees will be refunded to the free miner named on the receipt.

There are other refinements contained in PAC, such as the opportunity to extend the life of the claim for a further five years where it is not intended to do any further work at the present time.

Where there has been a minimum of 10 years work recorded on a claim, the owner may, within 60 days prior to forfeiture, make application and submit recording fees to use his PAC account deposit to hold his claim up to a maximum of an additional five years. Only one such extension of this nature can be applied.

PAC depositors are notified by letter whenever subtractions are made from their account.

#### Alberta

##### Several amendments were made to various parts of the Mines and Minerals Act:

**Part 1:** Consists of housekeeping amendments to

simplify the Crown's relationship with corporate entities, e.g.

- (a) Provides for one address for service for an agreement;
- (b) Provides for cancellation of agreements held solely by unregistered corporations, and for the cancellation and transfer of specified undivided interests in agreements held by unregistered corporations.

##### Part 2-Coal:

- (a) Flexibility is afforded as to the means of disposing of coal leases by allowing the public tendering process where this is desirable.
- (b) Provides the authority for regulations under which coal lessees would have to meet work requirements specified by the Minister.

##### Part 3-Quarriable Minerals:

- (a) Shortens term of quarriable mineral leases issued after July 1, 1978, to up to 15 years and prescribes a 15-year renewal term for all subsisting quarriable mineral leases.
- (b) Provides authority for regulations under which quarriable minerals lessees would have to meet work requirements specified by the Minister.

**Part 5-Petroleum and Natural Gas:** Modification to P & N G lease continuation clauses to allow lessee to keep drilling on a section, irrespective of whether wells are productive or dry. Formerly, the lessee could only continue drilling if the wells were dry. This a beneficial provision where a well encounters marginal production.

##### Part 6-Oil Sands:

- (a) The terminology for bituminous sands is merged into that for oil sands and the Bituminous Sands Regulations have been repealed.
- (b) Splits the title for petroleum and natural gas on the one hand and oil sands on the other. A lease of the former no longer grants the right to the latter. (The segregation of petroleum and natural gas from oil sands also appears in the new definition of oil sands.) However, under the amended Oil Sands Regulations, the option to acquire oil sands rights out of petroleum and natural gas leases issued before July 1, 1978 and from leases emanating from exploration agreements issued before that date, will remain. This regulation now provides for direct acquisition of oil sands rights as necessitated by the split in title.

**Part 7-Registration of Transfers and Documents:** Reduces minimum specified undivided interest in an agreement that may be transferred from 10 per cent to 1 per cent.

##### Part 9-Exploration:

- (a) Applies to exploration activity for all minerals, as before, but for coal and oil sands meshes with specific environmental legislation relating to those mineral substances.
- (b) Applies to all forms of exploration activity except for geologists taking hand samples on established trails, investigation of the subsurface by aircraft, stepout or preproduction holes in con-

nection with existing coal or oil sands mining programs.

- (c) Licences to have exploration work carried out and permits to operate exploration equipment, both province-wide, are required as before but are now of indefinite duration (previously annual renewal was required).
- (d) Specific exploration programs throughout the province now require specific approval (previously approvals were only required in northern and foothills areas).
- (e) Provides for cancellation of both licences and permits for contraventions, as contrasted to previous Part 9 which provided for cancellation of licences only, and then only after 30 days notice to rectify a default.
- (f) Introduces concepts of selective suspension of equipment for contraventions, security deposits for contentious exploration programs and civil penalties for contraventions of Part 9 or the Exploration Regulation.

#### **Exploration Regulation:**

- (a) Introduces "one window" concept whereby all applications for approval are submitted to Energy and Natural Resources and referred by ENR to departments or agencies whose area of concern will be affected, prior to approving, with or without conditions, or rejecting a proposed program of exploration.
- (b) Details consents which a potential explorer must get in addition to those which are not covered by the "one window" referral system, e.g. from a city, town or village where exploration will be conducted within their boundaries, from a district highway engineer where exploration will be on a highway or public road that is under construction.
- (c) In response to complaints from landowners about the damage to improvements on their land caused by exploration:
  - (i) a schedule of minimum distances for various types of exploration in relation to improvements has been prepared;
  - (ii) permittees are required to more conspicuously mark exploration equipment with their permit numbers and to affix permit tags at the location of exploration activity so that they can be identified.
- (d) In response to the increase in complaints from municipal authorities, written notice must be given to the appropriate municipal authority of the commencement and completion of a program and of any damage to property which has occurred during the conduct of the program.
- (e) Provides better shot hole and test hole maintenance and abandonment procedures.

#### **Exploration Drilling Incentive Regulation, 1978:**

- (a) Extends the exploratory drilling incentive system in modified form for 3-1/4 years, to March 31, 1981.
- (b) Excludes from the extended program any exploratory well shallower than 2,000 feet and the upper 2,000 feet of any exploratory well deeper than this depth.

#### **Geophysical Incentive Program Regulation, 1978:**

- (a) Procedures for certification have been simplified. (They now consist of one certification as opposed to the previous regulation which provided for interim and final certification.)
- (b) Requires copies of computer stacking diagrams

to be submitted along with the final report on a geophysical incentive program to verify claims for credit.

- (c) Increases the required subsurface coverage to 1,000 per cent in the foothills and northern areas from 400 per cent in the previous regulation, and in the settled areas to 600 per cent from 400 per cent in the previous regulation.

#### **Saskatchewan**

**Changes were made to regulations under the Mineral Resources Act, Oil Well Income Tax Act, and the Occupational Health and Safety Act.**

"The Oil Well Income Tax Act, 1977" is a basic income tax statute which levies a tax on the income, after proper allowance for deducting expenses, derived from the production of oil in the province. The Act which applies retroactively to January 1, 1974, was introduced to meet the objection to certain sections of the Oil and Gas Conservation Stabilization and Development Act, 1973 raised by the Supreme Court of Canada in rendering a decision on the so-called CIGOL case. In brief, the Act established "oil well income" for a taxation year as the aggregate of oil well income calculated with respect to "each" oil well from which revenue is received. In other words, a taxpayer must calculate oil well income under the Act on a well-by-well basis and then aggregate that income before applying the rate or rates of tax. For flexibility, the rate(s) of tax are prescribed by regulation by Lieutenant Governor in Council.

The changes to the Alkali Mining Regulations were made to adjust the Crown royalty levied on production of sodium sulphate in Saskatchewan. The changes were effective February 1, 1978. The new regulations cancelled the previous fixed royalty, which had been at 3.9 per cent of the value of sales since the early 1960's, and replaced it with a flexible system. The new royalty provides for a minimum percentage of 4 per cent and maximum percentage of 15 per cent. The specific rate applicable within that range is dependent on the posted price for kraft grade sodium sulphate (anhydrous sulphate), average operating costs (net of royalties), and the tonnage of products sold.

#### **Manitoba**

**No changes in legislation were reported, however, the Mining Act is now under review.**

#### **Ontario**

**A new Mining Lands Act has been drafted and is now under review by the Ministry. It will be forwarded to the Prospectors and Developers Association for comment before presentation to the Legislature.**

#### **Quebec**

**No new legislation was reported.**

#### **New Brunswick**

**The only new legislation in the field on non-renewable resources in the past year was the Underground Storage Act summarized as follows:**

The Underground Storage Act is a measure to avoid conflict between non-renewable resources and, at the same time, to ensure protection of the environment.

The Act as proposed would regulate storage at three separate stages:

- (1) Exploration and Evaluation
- (2) Construction
- (3) Production (storage and distribution)

The Act is general in nature, providing for discretionary powers of the Minister, and will be administered in conjunction with other Acts administered by the Minister. This allows for the easy implementation and flexibility of regulating the new industry. At the same time, it allows the Department to gain experience to devise more detailed legislation.

#### **Nova Scotia**

**No new legislation was introduced during the year; however, various regulations under the Mining Act are under review.**

#### **Newfoundland**

**Minor amendments were made to the Mineral Act, and a new Mineral Holding Impost Act was introduced. In prior years, the mineral rights to large tracts of land were conveyed to individuals and corporations by way of fee simple grants, leases, titles and other instruments. It was the hope of Government that these conveyances would lead to the continual development of our mineral resources. With the passage of time, it was felt that the degree of exploration and development was less than that required in the public interest of the Province.**

The purpose, therefore, for the enactment of the Mineral Holding Impost Act is to assist in the greater and fuller exploration and development of the mineral resources of the Province.

The wording of the Act is, in our opinion, clear and concise. However, to highlight some of the main features of the legislation, reference is made to the following:

The Act applies to all mineral land rights except those rights granted under the Crown Lands Mines and Quarries Act passed in 1961 and the Mineral Act passed in 1976. These two acts have provisions similar to that set forth in The Mineral Holdings Impost Act.

The Impost rate is;

- (a) 35¢ per hectare in 1978
- (b) 55¢ per hectare in 1979
- (c) \$1.15 per hectare in 1980
- (d) \$1.96 per hectare in 1981
- (e) \$3.00 per hectare in 1982 and subsequent years

The Impost on a taxpayer may be reduced in each year by:

- (a) any rentals paid to the Crown in respect of mineral holdings;
- (b) expenditures made by the taxpayer or a person on behalf of the taxpayer in respect of the mineral holding. These expenditures must be acceptable to and approved by the Minister of Mines and Energy and cover such items as prospecting, trenching, stripping, drilling, and engineering evaluation reports;
- (c) surrendering a portion or all of any holding not later than December 30th in the tax year.

Any Impost payable is required to be paid within three months after the close of the calendar year or the fiscal year of the taxpayer.

There is a right of appeal to the Impost of which the first appeal lies with the Mining Tax Review Board

and from the Board to the Supreme Court of the Province.

Persons interested in acquiring copies of this Act may contact the Taxation Division, Department of Finance or the Mineral Lands Division, Department of Mines and Energy.

#### **2. Bill C-14**

An Act to provide for the regulation, control and supervision of the development, protection, use and application of nuclear energy and matters related thereto was introduced in the House of Commons on November 24, 1977. Because of potential duplication with existing legislation in the Provinces, Quebec and Nova Scotia notified the Minister of Energy, Mines and Resources that they disagreed with the intent of this Bill. The matter was discussed at a meeting of Deputy Ministers in Toronto on May 11th. At that time, it was agreed that Saskatchewan would compile comments from the provinces and forward a brief to the Hon. A. Gillespie, Minister of Energy, Mines and Resources.

Saskatchewan outlined their position with respect to Bill C-14 and indicated the unnecessary duplication with respect to existing legislation. Also, many aspects of the Bill were *ultra vires* the authority of the Federal Government. Saskatchewan's position was supported by delegates present, and by the Mining Association.

#### **Brief to the parliamentary committee considering Bill C-14; presented by the Saskatchewan Mining Association, April 1978.**

The Saskatchewan Mining Association has represented those companies with producing mines in the province, as well as companies and individuals engaged in exploration for those minerals other than petroleum and natural gas, since 1965 when it was founded.

In 1977 the operating mines represented by the Association were responsible for mineral production generating a gross inflow of \$500 million. In uranium exploration alone, member companies spend in excess of \$40 million, representing at least 75 per cent of total uranium exploration expenditure in Canada.

Recent exploration, confirmed by studies of the Uranium Resource Appraisal Group of the Department of Energy, Mines and Resources indicates that Saskatchewan has the potential capacity for more than 50 per cent of Canada's total uranium reserves. Thus, this association believes we have an obligation to voice the serious concerns of industry concerning the implications of Bill C-14.

The uranium industry in this province has operated under the authority of the Atomic Energy Control Act for thirty years and clearly recognizes the need for updating. We are well aware of the provincial, federal, and international implications of a strategic mineral such as uranium and have followed closely, and participated in the public enquiries that have considered these implications.

We have reviewed the proposals of the present Bill C-14 and consider this an opportune time to comment on several aspects of concern to the members of the association.

**Concerns Regarding Bill C-14:** There are four major areas of concern:

- i) It is noted that the Bill creates some duplication and duality as it affects the division of

authority and responsibility between the Minister and the Nuclear Control Board, as well as between federal and provincial jurisdictions.

- ii) The introduction of the new concept of 'policy directives' and the excessive granting, through out the proposed Act, of discretionary powers to both the Board and the Minister, causes continuing uncertainty and lack of security for any one endeavouring to operate under the provisions of the Act;
- iii) Many of the procedures set out for licensing, operating inspection, and appeal are unnecessarily complex, and the applicable time frames are often unreasonable;
- iv) The Bill as drafted fails to provide for the necessary confidentiality to protect the legitimate business interests of the exploration and mining companies.

In the appendices to this brief, the association has endeavoured to cite specific examples, as they appear in the Bill, indicating the effects that such legislation may have relevant to the concerns expressed above.

**Summary and Conclusion:** In considering this Bill, it is apparent that other government policies and proposals have a profound and interrelated effect on the uranium mining industry, and we submit that opportunity should be given us to comment upon such matters as foreign ownership, export controls, and the stockpiling of uranium in relationship to consideration of any nuclear control legislation.

#### **Appendix 1 to brief submitted to the parliamentary committee considering Bill C-14**

- (1) We are aware that the Federal Parliament has jurisdiction in the atomic energy field and do not seek to dispute this authority; however, we believe there is a need for clarification in some areas of provincial-federal responsibility, particularly in early stages of exploration and development.
- (2) It is the wish of industry to have clearly defined guide posts so that reasoned business decisions can be made on the basis of such guide posts.
- (3) The general opinions expressed in this brief have not been developed in isolation, or in contradiction to stated interests of allied corporations or Associations; however, the initiative for this independent submission rests with the executive of the Saskatchewan Mining Association.

#### **Specific Comments by Section**

**S.2:** The definition of "nuclear facility" is very broad by reason of the definition indicated that it "includes all lands, buildings, structures and equipment that are connected or associated with any such work or facility". This could include equipment that could be off the project site and not used to handle prescribed substances, e.g. a townsite and the components thereof; aircraft used to transport men to and from the site.

**S.3, 30 and 66:** The Act extends to exploration activities and makes licensing to explore for a prescribed substance mandatory. It is suggested that, insofar as the exploration for and development of uranium orebodies is concerned, licences should not be required under the Act until site approval is sought under S. 22 (3) (a). Under the Act, the issuance of a licence by the Board is discretionary. Should the licensing requirement be retained at the

exploration stage, such a licence should be obtainable 'as of right', subject to such provincial or territorial regulations governing the exploration for, staking, and holding mining properties in respect of any other minerals. Discretionary licencing powers should be entirely removed from the Act.

If the Board wishes to obtain statistics as to the uranium exploration activity in Canada, the Act could require any person who acquires mining properties for uranium evaluation purposes to submit to the Board once each year a list of such, indicating location and claim or parcel numbers. In addition, rather than submitting separate work reports to the Board, a property holder could send to the Board a duplicate copy of provincially required assessment work filings.

**Ss. 6-18:** The provisions of the Act relating to the formation and procedures of the Board are vague, and certain sections are of serious concern: e.g.

- (a) S.13 contemplates division of the Board and that acts of a division are *deemed* to be acts of the Board (S.13(2)). The establishment of a division is not a board action, it is a *subjective* act of the chairman. In addition, for purposes other than those in S.13(4), a single member of the Board may comprise a division. If divisions are to be established by the Board they should have at least three members.
- (b) The ability of the Board to control itself by way of by-laws (passed by the Board) as set forth in S.18 is very broad, and should be limited. By-laws may not only relate to internal affairs but also "the performance of its duties and functions". N.B. Even the quorum is not fixed by the Act.

**S.19:** The concept of "policy directives" is unique to this Act. A policy directive would have to be "policy" and a "directive", and, at law, it could not go against the provisions of the Act (but the provisions are broadly drafted). Even though S.19(2) requires publication and tabling, a policy directive is enforceable upon issuance. It is noted that the policy directive must be on recommendation of the Minister—theoretically the Minister has a complete veto and Cabinet cannot act under this section without his approval.

It is strongly recommended that this section be withdrawn, as the principle is unacceptable; however, if retained, certain safeguards should be considered:

- (a) Some restrictions or guidelines should be set forth in the section;
- (b) Policy directives should be required to contain cross-reference to any relevant section and sub-section of the Act to which it purports to relate and that it not be valid unless it relates to a specific provision of the Act;
- (c) Except in cases of urgency or emergency (which must be set forth), a policy statement should not be effective until published;
- (d) Wording be added to prohibit the use of a policy directive except for matters of general application (i.e. policy directives aimed at specific applications or companies be prohibited);
- (e) Appeal to the Minister could be contemplated by the Section.

If it is the intention of Cabinet to reserve unto itself the right to remove matters from the Board for "personal" handling by Cabinet or the Minister, the Act should so state specifically. Such removal can be an indirect result of the use of S.19.

As the section required policy directives to be "by order", i.e. an Order-in-Council, the reason for the section is questionable and it could be deleted. The provisions of S.59 dealing with regulations under the Act are very broad and should be adequate.

**S.22:** This section contemplates application for licences, but places no obligation on the board to deal with such applications promptly. Some time limits should be established, but it is acknowledged that these would be difficult to define in view of the requirement for public hearings set out in S.32.

**S.32:** In 32(1) it is submitted that discretionary powers should be removed and public hearings under the conditions of S.20(a)(i) could be included in the mandatory hearings (32(2)). Matters referred to in S.2(a)(ii) to (iv) should not be subject to public hearings. Licensing prior to site approval (S.22(3)(a)) should not be subject to public hearings, whether discretionary or mandatory.

The Board should be required to give written reasons for any decision. Without this provision, in all likelihood reasons could not be required from the Board.

**S.36:** Provisions should be made for a *right* in the applicant to require confidentiality or alternatively, a right to appeal the decisions of the Board under S.36(5) in a "simple manner". Possibly the Act or Regulations (with appropriate amendment to S.36) could set forth a list of documents that are *prima facie* deemed confidential, e.g. exploration data; detailed cost and financial analyses; detailed flow sheets; mill chemical consumptions; sales contracts, etc.

Provisions should be made for 'in camera' hearings to protect confidentiality and/or the national interest.

**Ss. 37 and 45:** The powers of the inspector are very broad. His duty should be more clearly set forth, and it should be acknowledged that an inspector and the Board are liable in cases of abuse or negligence on the part of an inspector.

**S.56:** Much of the substantive matters under the Act have been left to be governed by regulations. It is suggested that the immediate drafting of proposed regulations (i.e. before the Bill is passed into law) and the circulating of these to the industry for its information and comments is highly desirable, if not essential.

Subsection (3) should be amended to require publication where *any* amendment from the originally published wording has been made.

**S.57:** The time limits for appeal should be extended to permit time for proper consideration and preparation for appeal.

It should be noted that the courts may consider *only* questions of law or jurisdiction. Otherwise, appeal is only to the Governor-in-Council. Is this satisfactory? Possibly appeal under S.57(1) or (2); or 30 days following decision under 57(2) the law or jurisdiction is upheld by the courts.

It is suggested that the time limits should be the greater of 90 days for initial appeal under either 57(1) or (2); or 30 days following decision under 57(2) to choose to appeal under 57(1).

**Part II:** In essence, much of this Part is merely a duplication of the Atomic Energy Control Act—S.66 is virtually identical.

This Part overlaps the licencing requirements of Part 1 so that technically to comply with the Act, dual licences are required—one from the Board and one from the Minister.

It is understood that the intention is for the Board to concern itself with "technical" matters and for the Minister to be concerned with product disposition, safeguards, etc. The Act should make the respective jurisdictions separate and clearly defined.

### **3. Report of Chief Inspectors of Mines:**

A report of the Chief Inspectors of Mines was submitted by Mr. L. Tanguay of the Province of Quebec.

As you know, the Chief Inspectors' sub-committee meets twice a year: First, during the CIM Annual Convention (April 21, 1978 in Vancouver) and second, last Friday September 8th, here in Toronto.

The prime purpose of those meetings is to provide a forum for discussion of matters relating to mine inspection and work towards standardization of mine safety and health practices.

The major items of discussion were as follows:

- National Mine Rescue competition and training
- Interprovincial assistance in large fires
- Mine rescue equipment costs
- Implementation of resolution on use of non-flammable hydraulic fluids
- Resolution re continuation of chief inspectors meeting at M.M.C.
- Roll-over protection for underground vehicles
- Code for off-highway trucks
- Proposed elec.-mech. committee meeting
- Co-ordination of mines inspectorate role with AECB
- Training and certification of mine supervisors
- Metric conversion for safety regulations
- Use of infra-red analysis for silica
- The Canadian Centre for Occupational Health and Safety
- The Explosive Act amendments (federal)
- Bill C-14
- Exposure to diesel emissions
- Injuries statistics
- PCB's (polychlorinated biphenols)
- Fire fighting on surface

As a result of these meetings work is continuing on many of the above items to reach a satisfactory resolution.

In the meantime, the Chief Inspectors unanimously agreed to recommend to the No. 1 Committee of the Provincial Ministers of Mines, the following:

- (1) Whereas there has been in recent years several changes in the jurisdictions responsible for the health and safety of workers in Canadian mines; and whereas the Chief Inspectors' meeting continues to provide a valuable avenue for the discussion and resolution of problems and legislation common to the health and safety of workers in Canadian mines; that the Mines Ministers may wish to review with their Ministerial colleagues the appropriate authority for the continuation of the Chief Inspectors' meeting in the future.
- (2) In particular, the Chief Inspectors are unanimously concerned with the follow-up given by the Ministers' conference to the motion presented last year concerning support, both on a provincial or national basis, for co-ordinated research in occupational health and safety; namely in determining satisfactory and acceptable non-flammable hydraulic fluids for underground mining equipment, and other such pertinent research as may from time to time be indicated.

#### **4. Report of Subcommittee of Provincial Geologists**

A report of the Chairman of this subcommittee was submitted by Dr. A.F. Laurin of Quebec.

The subcommittee met in Toronto on March 5, 1978, during the annual convention of the Prospectors and Developers Association of Canada, and again on September 10, 1978, in advance of the Mines Ministers' Conference. The following were the main items considered during the year:

(1) **Report on Provincial Geoscience Surveys:** It was agreed that the report should be prepared annually and should contain information on the funding level, staffing requirements, nature, timing of, direction and scale of, all provincial geoscience survey projects. Each province will provide the data for fiscal 1978/79 to the chairman for publication in a suitable standard format to be approved by the subcommittee members.

(2) **Canadian Geoscience Council:** Upon its formation the subcommittee was invited to accept membership in the Canadian Geoscience Council. The matter was thoroughly reviewed after discussions with the president of the council to seek clarification of the council's aims and objectives. It was moved by A. Sutherland-Brown and seconded by F. Shea, and approved unanimously, that:

The subcommittee apply to the Canadian Geoscience Council for associate membership with the proviso that the subcommittee may withdraw from the council at some future date if an obvious conflict of interest develops.

(3) **Future Orientation of Subcommittee:** Discussion of the future work of the subcommittee resulted in the following recommendations:

- Subcommittee should work toward uniformity of legislation in respect of the submission of mineral exploration data.
- Subcommittee should complete its review evaluation of the implementation of the recommendations of the task force on the submission of exploration data, as new proposed legislation and regulations receive provincial government approval.
- Subcommittee should review the concept of portable assessment credits.
- Subcommittee should review the desirability of core storage to improve the geoscience data base, and make recommendations as to selection, collection and storage facilities.

(4) **Confidentiality of Exploration Data:** It was moved by I. Haugh and seconded by M. Day and approved unanimously that:

The provincial governments move toward full disclosure of the results of all mineral exploration work on disposed lands after a specified period of confidentiality or after the ground reverts to the Crown, whichever comes first.

The period of confidentiality is to be discussed at future meetings of the subcommittee.

(5) **Representation of Department of Indian Affairs:** After further discussion of this issue, the Chairman moved and M. Day seconded a motion that:

Representatives of the Department of Indian Affairs for the Yukon and the Northwest Territories continue to be accorded observer status without voting privileges in the sub-committee of provincial geologists.

This is in recognition of the role of the Depart-

ment of Indian Affairs in matters related to mineral resource management in the Yukon and the Territories.

(6) **Geoscience Data Base:** Dr. A. Sutherland-Brown has been appointed as Chairman of a task force of the Mining Association of Canada and Energy, Mines and Resources, Canada, to investigate means to improve the geoscience data base in Canada in support of mineral exploration. Among the items proposed by the task force, the following were discussed and will receive further detailed consideration by the subcommittee:

- Completion of low-level, high quality air photography and topographic base mapping,
- Completion of geological mapping at a scale of 1:250,000,
- Completion of aeromagnetic surveys at a scale of 1:50,000,
- Completion of regional geochemical surveys of reconnaissance scale,
- Preparation of computerized, shallow-level, mineral deposit files,
- Completion of detailed mapping of all favourable mineral belts at a scale of 1:50,000 or more detailed,
- Initiation or expansion of airborne electromagnetic and radiometric surveys of favourable mineral belts,
- Preparation of mineral potential-land use planning maps,
- Establishment of core libraries,
- Research on conceptual modes re the origin and localization of mineral deposits,
- Provision of prospecting assistance.

In accordance with the method of rotating chairmanship approved in the subcommittee's term of reference, the Chairman for the next year is Dr. E.G. Pye, of the Ontario Geological Survey, Ministry of Natural Resources.

#### **5. Rights of Entry**

A report dealing with the problems related to rights of entry was submitted by W.I. Spence, Mines Commissioner, New Brunswick:

The law as it relates to a right of entry was summarized for all Canadian jurisdictions and presented last year as a working paper to the thirty-fourth annual Conference of the Provincial Ministers of Mines at Quebec City. In conjunction with the summary the subcommittee was further directed to recommend legislation or regulation changes that would facilitate the development of mineral resources on Crown and granted lands.

To stimulate discussion, and in keeping with the principle that mineral resources should be developed in an orderly manner, and that laws should encourage mining exploration and development and not hamper it, it was recommended that a right to enter was mandatory to accomplish this objective. Where an entry is required on private lands and such right cannot be negotiated with the surface owner, a licensee so affected should have recourse to legislation permitting a hearing, whereby the conflicting issues may be discussed, evaluated and resolved.

Since this paper was prepared, mining legislation has been revised in two jurisdictions. The Mineral Act of Newfoundland was proclaimed on July 12, 1977 and that of British Columbia (also the Mineral Act) on January 1, 1978. I will review these acts briefly in the context of the right of entry on private

lands. The Newfoundland act has not changed in this respect, that is to say, the Lieutenant-Governor in Council may make an order permitting entry on private lands in the event the owner refuses to give his consent. Section 6 of the British Columbia Act limits entry to:

- (a) Crown land and land in which the minerals have been reserved to the Crown, and
- (b) private lands in which gold and silver have been reserved to the Crown.

The questions arises as to the extent of the lands in which the rights to minerals have been alienated.

*Conflicting* rights are briefly outlined as follows:

**Basic Premise**—In all jurisdictions:

- (1) Minerals are owned by the people (Crown). Land granted from the Crown usually conveyed the mineral rights as well as the surface rights and in general some minerals, e.g., gold, silver, etc. were reserved to the Crown,
  - (a) where minerals are owned by the people (Crown) prospectors may obtain a right to search, stake out a claim, and develop minerals found on such land, and
  - (b) where rights to minerals are alienated from the crown (all or in part) the owner of such mineral rights is not obligated to explore and develop for minerals.
- (2) Mineral rights are considered to be property separate from the soil or surface rights. People must have access if our minerals are to be explored and developed.

**Recommendations**: Whereas there is concern as to when an entry on land is an act of trespass or a right granted under mining legislation; and

Whereas there is often conflict between the prospector and the surface owner over rights and the need for these conflicts to be resolved; and

Whereas compensation for the surface owner has to be dealt with.

It is recommended:

- (1) That a legal study of mineral rights vis a vis surface rights be conducted.
- (2) That rights under mining law be clarified.
- (3) That access to private lands be studied to determine if uniform legislation covering right of entry is possible for all jurisdictions.
- (4) That the subject of access be studied in relation to the allocation of mineral rights and staking requirements.

Ontario's position was outlined in a report submitted by J. McGinn:

Traditionally in the administration of mining lands in Ontario, it has been accepted by the administrators, that is, the mining recorders, that where mining rights were in the Crown and open for staking out, and where the surface rights had been disposed of to the private sector, access was necessary to the miner, since on recording the mining claim, in order to hold the acquired ground, work was required to be done for the miner to hold his rights.

However, this was never clearly spelled out in the Mining Act. Therefore, in policy, the mining recorders were instructed that where this situation existed the mining claim holder was to be advised that while it was believed he had the right of access, he should, wherever possible, contact the owner of the surface rights and arrange for permission to enter on the lands and at the same time arrange for payment of damages should they be done. This leverage was implied in Section 101 of the Mining Act, which stated:

101-(1) Where the surface rights of land have been granted, sold, leased or located with reservation of mines, minerals or mining rights to the Crown, or where land is occupied by a person who has made improvements thereon that in the opinion of the Minister entitles him to compensation, a licensee who prospects for mineral or stakes out a mining claim or an area of land shall compensate the owner, lessee, locatee or occupant for all injury or damage that is or may be caused to the surface rights by such prospecting, staking out or operations, and in default of agreement the amount and the manner and time of payment of compensation shall be determined by the Commissioner after a hearing, and, subject to appeal to the Supreme Court where the amount awarded exceeds \$1,000. his order is final. 1971, c. 50, s. 58(5).

- (2) The Commissioner may order the giving of security for payment of the compensation and may prohibit, pending the determination of the proceeding or until the compensation is paid or secured, further prospecting, staking out or working by such licensee or any person claiming under him.
- (3) Where an order is made prohibiting the prospecting staking out or working of mining claim under subsection 2, no other licensee has the right to prospect or stake out a mining claim to the prejudice of the prohibited licensee while the proceeding is pending.
- (4) The compensation is a special lien upon any mining claim or other right or interest acquired by the licensee or any person claiming under him in the land so prospected, staked out or worked, and no further prospecting, staking out, or working, except by leave of the Commissioner, shall be done by the licensee or any person claiming under him after the time fixed for the payment or securing of the compensation unless the compensation has been paid or secured as directed. R.S.O. 1970, c. 274, s. 101 (2-4)

Subsection 1 implies a right by the claim holder to prospect, stake out and carry on mining operations subject to the payment of compensation by the miner.

Subsection 2 appears to protect the surface rights holder, if the matter comes before the Commissioner, prohibiting the miner from working if work had commenced. It does not appear to prohibit the miner from starting work, however.

Over the past 25 years the policy appeared to work well, as to my knowledge no holder of mining rights was prohibited from entering on or working on mining claims staked out as mining rights on which surface rights were patented. There were a number of cases before the Mining Commissioner concerning compensation which arrived there since the miner and the surface rights holder could not agree on the amount of payment to be made for damage done to the surface estate.

In 1972 the former Department of Mines merged with the former Department of Lands and Forests to form the Ministry of Natural Resources.

It was during that time a committee called the

Advisory Committee to the Minister of Natural Resources on the Revision of the Mining Act was struck, which functioned from 1972 throughout 1973. Its members were acknowledged experts on exploration and development both from the private sector and from the government.

One of the recommendations of the committee was that mining claims staked out would be restricted to mining rights only, thereby agreeing with the concept of multiple use of land. At the same time the committee recognized the danger with respect to access for the miner and recommended in the new Mining Act that:

35. The statute or the lease make it abundantly clear that the lessee has the right of access for the purpose of removal of the mineral resources by any means whatsoever. In other words the lessee will be entitled to use the surface rights for the purpose of removing the minerals, subject to the regulations. Further, it should be clear that the right to use the surface for such access is without compensation to any holders of the surface rights where the staking occurred prior to the disposition of the surface rights. The lessee shall be obliged to pay compensation where the staking is subsequent to the disposition of the surface rights.

This recommendation has been acted on by the Ministry and has been drafted into the proposed new Mining Lands Act which will likely be placed before the legislators within the next year.

It is ironical that just subsequent to the committee's report in 1974, a case appeared before the Mining Commissioner in which a dispute was entered into between the owner of the surface rights and the holder of four mining rights only mining claims in the Timmins area in which the holder of the surface rights prevented the miner from entering on his lands. The miner requested assistance from the Ministry of Natural Resources in enforcing rights which he suggested were implied under the Mining Act. The Mining and Lands Commissioner was of the opinion that in view of the fact that the issue involved was not one of the payment for compensation for damage done to the surface, he, the Commissioner, had no jurisdiction and the matter should be resolved in civil court. The Commissioner advised among other things the Ministry has no statutory power to require the owner of the surface rights to allow the miner access to his mining claims. The difficulty is not in the existence of the right of the claim holder to enter the land but in the remedies of enforcing the right. The Commissioner was of the opinion that in order for the miner to enforce his rights he should proceed through normal legal channels and attempt to secure an injunction.

It would appear the Committee's concerns are well founded, and the problem is being resolved in the new Act.

## 6. Aggregate Resources

A report was submitted by D.E. Barnett of New Brunswick.

At the thirty-fourth annual conference of Provincial Mines Ministers held in Quebec City, September, 1977, a report entitled "Statutory, Reclamation and Supply Aspects of Mineral Aggregate Production in Canada" was presented to Technical Committee No. 1 by New Brunswick. This report was the result of a recommendation made at the thirty-third conference in St. John's, Newfoundland, which stated that interested provinces should initiate the work of

compiling data on resources of sand and gravel and crushed stone across Canada.

However, whereas most provinces had not had an opportunity to comment upon the report, in particular, the recommendations, it was decided to defer any discussion or decision on the formation of a subcommittee on aggregates until the next Mines Ministers Conference in Toronto. At the same time all provinces were invited to submit their comments to New Brunswick for incorporation into a report to be given at the thirty-fifth conference.

This report provides a synopsis of the comments and recommendations made during the past year.

**Comments:** Several provinces made minor changes in the text or updated information, particularly in regard to recent legislation, but in general, most provinces were supportive of many of the recommendations. One province did, however, point out that some of the conclusions drawn did not strictly apply to the situation in their province.

All provinces favoured some sort of exchange continuing but there were differences in the mechanics of the exchange. Correspondence included such suggestions as:

- (1) Formation of a subcommittee to look into co-ordinating information exchange and possible development of a reclamation manual.
- (2) Production of reports similar to that given at the thirty-fourth Provincial Mines Ministers Conference on various aspects related to pits and quarries.
- (3) Support of the information exchange but using a symposium structure.
- (4) Continued exchange but not necessarily on an annual basis.

**Recommendation:** Whereas there are many areas of mutual interest on quarriable substances; and whereas most provinces favour a continued information exchange on aggregate resource management; and,

whereas the Mines Ministers Conference would appear to offer an opportunity for such an exchange through a subcommittee of Technical Committee No. 1.

It is recommended that:

"An interprovincial committee on aggregate resources be established as a subcommittee of Technical Committee No. 1"

It is further recommended that the chairman for such a committee be drawn from the present conference's host province, i.e., for 1978-79, the Province of Ontario. In this way continuity of proceedings can be assured.

It is further suggested that such a committee should immediately address itself to development of terms of reference but that some of the following areas of interest should be included:

- (1) Exchange of information on aggregate resource management techniques.
- (2) Periodic update on problems and solutions of aggregate resource management.
- (3) Provide an overview of regulations governing extraction of aggregates.
- (4) Consideration of assessing the reaction of the aggregate industry to government statutes controlling it with an idea to improving legislation.
- (5) Preparation of a national overview on reclamation of sand and gravel pits and quarries.
- (6) Examination of Federal Statutes as they apply to aggregate extraction.
- (7) Review of Statistics Canada forms on aggregate

production.

- (8) Methods of encouraging municipalities to plan for aggregate extraction within their municipal plans.
- (9) Any other as the committee may decide.

It has been suggested in some correspondence that several recommendations in the previous report dealt with subjects specific to each province, but I respectfully suggest that there may still be benefits to be gleaned by each province from the experiences of their sister provinces.

It is suggested that there is no one group in Canada today that can address itself to the subject of aggregate resources and it is further suggested that the formation of such a subcommittee, as recommended, can provide such a vehicle.

## **7. What can Provinces do in the Technical Field to better assure Canada's future as a Metal Producer in the 1980's?**

The following report was submitted by A.F. Larin of Quebec.

In order to assure Canada's future as a metal producer in the 1980s competition on a world-wide basis will have to be met by finding richer deposits and by increasing the efficiency of the metal producers and smelters. The role of provincial governments in the technical field should be all-important in a development plan designed to reach these objectives. It can center on more applied research in the traditional fields of geo-scientific and metallurgical studies. It can also be expanded by more research in fields usually left in the background by provincial governments, such as market and commodity studies, mining method studies, land planning studies and transportation studies.

**Geoscientific Studies:** The role of provincial governments in supplying base geological maps and reports for the exploration activities of the mining industry has been supplemented in the last ten years by most provinces going into the field of geophysical and geochemical surveying. The trend towards better definition of exploration targets can continue by provincial governments going a step further and accelerating mining district studies with the various tools supplied by modern sciences and by actually testing working hypotheses by strategic drilling.

The function of provincial government agencies in providing proper access to the information is unique and can be improved by better and more compilation maps and by setting exploration data banks. Basic research in metallogeny can be accelerated by the provincial governments co-ordination of studies of various institutions such as universities, technical institutions and mining companies with its own research.

**Ore Dressing and Metallurgical Research:** This type of research is currently being done by the provincial governments at the request of the mining industry. It can be supplemented by more basic research on metallurgical problems that hinder some potential deposits from being developed.

**Various Studies:** The profitability of mining enterprises in a world that is becoming everyday more complex can depend on the understanding and the mastering of the context in which they operate; hence sophisticated economic studies, land planning studies and transportation studies can be used to assure Canada's future as a metal producer.

Mining method studies and operational research are two fields that have been neglected by most provincial governments and which could, in some circumstances "improve" the profitability of metal producers and hence their chance of survival.

## **8. Recommendations of Committee No. 1**

- (1) Reports on new or proposed legislation were received. No recommendations were proposed.
- (2) With respect to Bill C-14, *the Province of Saskatchewan recommends* that the committee convey to the Provincial Ministers of Mines their agreement with recent action taken by the Provinces in expressing their disagreement with federal Bill C-14.

*It is recommended that* the Ministers collectively request the Federal government to respond favourably to the provinces suggestions that Bill C-14 be either completely repudiated or substantially rewritten; and that discussions in this regard be initiated as soon as possible.

- (3) With respect to the subcommittee of the Chief Inspectors of Mines, *it is recommended that:*
  - (a) The Mines Ministers review with their colleagues the appropriate authority for the continuation of the Chief Inspectors meetings in the future.
  - (b) The Mines Ministers support coordinated research in occupational health and safety, namely in determining satisfactory and acceptable non-flammable hydraulic fluids for underground mining equipment, and other such pertinent research as may from time to time be indicated.
- (4) With respect to the Standing Subcommittees of Provincial Geologists, *it was recommended that:*
  - (a) The subcommittee apply to the Canadian Geoscience Council for associate membership with the proviso that the sub-committee may withdraw from the council at some future date if an obvious conflict of interest develops.
  - (b) The subcommittee work toward uniformity on legislation in respect of the submission on mineral exploration data.
  - (c) The subcommittee should complete its review and evaluation of the implementation on the recommendations of the task force on the submission of exploration data, as new proposed legislation and regulations receive provincial government approval.
  - (d) The subcommittee should review the concept of portable assessment credit.
  - (e) The subcommittee should review the desirability of core storage to improve the geoscience data base, and make recommendations as to selection, collection and storage facilities.
  - (f) The provincial governments move toward full disclosure of the results of all mineral exploration work on disposed lands after a specified period of confidentiality or after the ground reverts to the Crown, whichever comes first.
  - (g) That representatives of the Department of Indian and Northern Affairs for the Yukon and Northwest Territories continue to be accorded observer status without voting privileges in the subcommittee of provincial geologists.

*It is recommended that* the ministers support the

work of this subcommittee and accept the recommendations as proposed to Committee No. 1.

(5) With respect to the problems related to rights of entry, *it is recommended that* a task force be established to examine legal and other problems related to rights of entry as outlined in the report submitted by W.I. Spence of New Brunswick.

(6) With respect to aggregate resource management, *it is recommended that* a subcommittee of Technical Committee No. 1 be established, and work commence immediately to develop terms of reference following areas of interest outlined in the report submitted by D.E. Barnett, New Brunswick.

(7) With respect to technical work carried out by provincial governments to better assure Canada's future metal producer in the 1980's, the committee received strong support and endorsement of suggestions made by Dr. A.F. Laurin of Quebec.

## Committee No. 2

### Financial and Statistical

Chairman: John H. McKillop  
Co-Chairman: Robert H. Moncur

#### 1. Review of Legislation enacted or proposed since the 1977 conference

In keeping with past practices, representatives of the various provinces reported upon legislative changes of interest to the committee.

A detailed account of each such presentation follows:

##### **British Columbia**

Since the last report to the Financial and Statistical Subcommittee at the 34th Annual Conference of Provincial Mines Ministers held in Quebec City there have only been two changes which impact upon resource taxes and royalties within the Province of British Columbia. These changes are summarized as follows:

**Coal Royalty Regulations**—On June 30, Bill 27 the Coal Amendment Act 1978 received Royal assent. Under Section 22 of that Act, the previous royalty of a \$1.50 per ton for metallurgical coal and 75 cents per ton for thermal coal was replaced with a royalty of 3-1/2 per cent of the coal produced. A royalty payment is required on the disposition of any coal produce from a location, and is calculated on the basis of mine head value. To facilitate this, amended Coal Royalty Regulations were also approved on July 13, 1978. These regulations set out the rules governing the calculation of royalty and transition between the old and new systems.

**Petroleum and Natural Gas Royalty Regulations**—In response to the 1977 Energy commission hearings, the Ministry of Mines and Petroleum Resources issued new petroleum and natural gas royalty regulations which became effective January 1, 1978. The major changes incorporated in these regulations are as follows:

The exploration and development incentive credit of 75 cents on each barrel of old oil was terminated.

The Crown royalty rate on old oil production was reduced to compensate for the elimination of the exploration and development credit. The rate structure for old oil is now:

Production	Rate
0 - 600 barrels	(Production) $\frac{2}{5000}$
greater than 600 barrels	72 barrels plus 40 % of the excess over 600 barrels.

The royalty rate on new oil was not changed.

A new class of petroleum termed "*incremental petroleum production*" was introduced, which is defined as that part of the petroleum production which the Ministry considers attributable to the recovery of additional reserves that would not otherwise have been recovered if an approved upgraded water-flooding or tertiary recovery pilot scheme had not been implemented. Incremental petroleum production is subject to the new royalty rates provided for under the regulations.

Provisions were also made in the regulations to exempt incremental petroleum production allo-

cated in accordance with the terms of an approved tertiary recovery pilot project from the payment of royalty and to allow the Lieutenant Governor-in-Council to establish special rates of royalty for petroleum production from an approved tertiary recovery project other than a pilot project.

The royalty rates for old and new gas were amended to yield a net back to producers slightly less than that which would be obtainable through gas sold under contract to the British Columbia Petroleum Corporation. The new rates provided under the regulations are as follows:

##### **Old Gas**

##### **Selling**

Price	Rate
\$1.00/mcf	
or less	42%
\$1.00/mcf	that percentage determined by
	$42 + 26 \frac{(\text{market value } \text{¢ per mcf} - 100)}{(\text{market value } \text{¢ per mcf})}$

##### **New Gas**

##### **Production**

##### **Selling**

Price	Rate
\$1.20/mcf	
or less	26%
\$1.20/mcf	that percentage determined by
	$26 + 41 \frac{(\text{market value } \text{¢ per mcf} - 120)}{(\text{market value } \text{¢ per mcf})}$

A supply of the specific amended regulations is being provided for any persons who are interested.

##### **Alberta**

**The Mines and Minerals Act—Part 1**—Clarifies the time at which the Crown's lien for unpaid royalty arises, and extends the lien to fixtures on the land, described in a disposition, under which royalty is payable.

**Part 2—Coal**—Royalty on coal is no longer fixed by the Act, but may be prescribed by regulation.

**Part 3—Quarriable Minerals**—Removes concept of annual minimum royalty.

**Part 6—Oil Sands**—Removes all maximum royalty restrictions under bituminous sands leases and oil sands leases whenever granted.

**Coal royalty Regulations**—Removal of royalty minimum of five per cent on coal production from selected leases to give recognition to producers facing hardships.

**Mineral Rights Compensation Regulations**—Provides for exchange or cash refund where a Crown lessee is prohibited access, to explore and develop his minerals, by government action.

The cash refund is based on out-of-pocket expenses—e.g., exploration expenditures by registered holders of interests, bonus to Crown, rent, interest, etc.—and not on the worth of the mineral resource.

### **Exploratory Drilling Incentive Regulation, 1978:**

- (a) Extends the exploratory drilling incentive system in modified form for 3-1/4 years to March 31, 1981.
- (b) Increases by 35 per cent the credit values for incentive footage deeper than 2,000 feet at qualifying wells spudded after December 31, 1977.
- (c) Ensures that natural gas royalty will continue as a source of credit redemption, if it falls under the jurisdiction of the Alberta Petroleum Marketing Commission and attempts to reinstate crude oil royalty as a source against which credits may be applied.
- (d) Extends the deadline for utilizing credits from December 31, 1979, to December 31, 1987.
- (e) Changes royalty holiday on crude oil production from the qualifying interval of an incentive exploratory well from five years, to the initial 60 calendar months, to enable intermittent producers to enjoy the entire exemption.
- (f) Reduces royalty holiday on gas production, from the qualifying interval of an incentive exploratory well, to the initial 12 calendar months of gas production from two years.
- (g) Allows royalty holiday, to be applied to crude oil and gas production from a depth interval that straddles the qualifying and non-qualifying footage of an incentive exploratory well. Previously, if any part of an interval was in non-qualifying footage, no royalty exemption would be allowed.
- (h) The transfer of unused portions of royalty exemption periods to twin wells in the same spacing unit, is also permitted where due to inadvertent damage, production cannot be obtained from an incentive exploratory well.

### **Geophysical Incentive Program Regulation, 1978:**

- (a) The credit for a geophysical incentive program conducted under the GIPR, 1978 is one-half of the credit that was earned for an identical program conducted under the predecessor Geophysical Incentive Program Regulations.
- (b) Geophysical incentive credits may now be applied against the same range of financial obligations to the Provincial Government as have been made available for the application of exploratory drilling incentive credit under EDIR.
- (c) Designates December 31, 1987, as the deadline for utilizing credits earned under a geophysical incentive program.

**Natural Gas Royalty Regulations**—Provides that, where in a month, the average daily production of natural gas from a gas well (not a zone) is 250 mcf per day of continuous operations or less, the gas obtained from the well is eligible for reduced royalty in accordance with a formula which is production dependent. Both old and new gas from low productivity gas wells are eligible for the lower royalty. The minimum royalty payable on gas from a low productivity gas well is 5 per cent (prior to amendment minimum royalty on gas was 22 per cent based on gas selling at 26 cents per mcf or less).

**The Freehold Mineral Taxation Act—Mineral Rights Assessment Regulations**—The Coal Operating Cost allowance has been added as a schedule to the Mineral Rights Assessment Regulations, as a guideline to the Chief Assessor and the Mineral Rights Appeal Board in determining what costs are

deductible in the assessment of coal rights. Since the assessment applies only to coal reserves which are being mined, costs incurred prior to the recovery of the reserves and costs incurred beyond the mine gate are not included in the cost allowance.

### **Mineral Rights Assessment and Taxation Exemption Regulation 1977:**

- (a) Makes freehold coal rights, which were previously exempted from assessment, subject to assessment and tax in the 1977 and subsequent taxation years.
- (b) Increases the upper limit of the assessed value of petroleum or natural gas rights that will be exempt from assessment and tax from \$50,000, to \$100,000.

### **The Financial Administration Act—Freehold Mineral Tax Remission Regulation, 1977—**

Complements clause (b) above by providing for remission of tax on the first \$100,000 of the assessed value of a petroleum or natural gas right having an assessed value of more than \$100,000.

**The Petroleum Marketing Act**—Amended, to extend the petroleum marketing scheme to condensates derived from natural gas.

### **Saskatchewan**

**Bill 47**—Saskatchewan reported that two changes had taken place of interest to the Committee.

In the past year, the Province of Saskatchewan enacted *The Oil Well Income Tax Act*. This legislation was passed as a result of the Supreme Court decision in the CIGOL case. The court ruled that the imposition of mineral income tax and royalty surcharge on crude oil production was unconstitutional as it was an indirect tax. Approximately \$500 million collected by the province since January 1, 1974, was jeopardized by this decision.

The Oil Well Income Tax Act, 1978, was introduced by the legislature to protect revenue collected since January, 1974, and to provide a means of collecting revenue prospectively. Under the Act, every person is liable to pay an income tax on his oil well income derived from the production of oil from wells in Saskatchewan.

Generally speaking, a taxpayer's oil well income for a taxation year is the revenue received by him from the production of oil less the actual outlays and expenses incurred by him for the purpose of earning such revenue. The revenue that each taxpayer must recognize in calculating the oil well income for a taxation year is the revenue derived by him from the production of oil from oil wells, whether as rentals, royalties, fees or in any other form. From these revenues, the taxpayer may deduct the outlays or expenses made or incurred for the purpose of gaining or producing his oil well revenue. Deductions for depreciation, overhead and administrative expenses, exploration and development expenses and interest costs are limited to amounts prescribed by Regulations. No deduction is allowed for depletion.

Royalties paid to the Crown (including royalties paid on freehold land acquired by the Crown under Bill 42) are deductible from tax otherwise payable.

The tax collection mechanism under the Act requires each taxpayer to file an annual tax return. The full amount of the tax owing for that taxation year, less amounts withheld and remitted on behalf of the taxpayer, must accompany the return.

**Sodium Sulphate**—Changes in Crown royalties

levied on production of sodium sulphate in Saskatchewan were commenced during the past year. The previous rate of 10 per cent had been in effect since January, 1977. The new system is more flexible. As cost and price conditions in the industry change, the royalty percentage adjusts accordingly. The percentage will vary from a minimum of four per cent to a maximum of 15 per cent.

#### **Manitoba**

Manitoba reported that the *Mineral Acreage Tax Act* had been repealed.

#### **Quebec**

**Fuel Tax Act**—Reduction of the tax from 25 cents per gallon on fuel oil and 19 cents per gallon on gasoline to a standard three cents per gallon for vehicles operated other than on public roads and used in mining operations.

**Meal and Hotel Tax Act**—Abolition of the 8 per cent tax on hotel rooms.

**Quebec Taxation Act**—With respect to mining companies, the effect of the amendments is to reduce (differences) between the Quebec Income Tax and the Federal Income Tax Act and to render them more compatible.

Dividend gross-up was increased from 33-1/3 per cent to 50 per cent and the dividend tax credit from 11-1/4 per cent to 12-1/2 per cent.

Finally, income tax withholding tables for 1978 were revised by the introduction of 21 levels of taxation replacing the seven previous levels and also by the application of a scale of progressive tax rates varying from 13 per cent to 33 per cent to replace a scale varying from 16 per cent to 28 per cent.

#### **New Brunswick**

There was no change in Mining Tax legislation during the year.

The Royalty on peat moss, however, is currently under review.

#### **Newfoundland**

**The Mineral Holding Impost Act**—In prior years the mineral rights to large tracts of land were conveyed to individuals and corporations by way of fee simple grants, leases, titles and other instruments. It was the hope of government that these conveyances would lead to the continual development of our mineral resources. With the passage of time, it was felt that the degree of exploration and development was less than that required in the public interest of the province.

The purpose, therefore for the enactment of the Mineral Holdings Impost Act is to assist in the greater and fuller exploration and development of the mineral resources of the Province.

The wording of the Act is in our opinion clear and concise. However, to highlight some of the main features of the legislation, reference is made to the following:

The Act applies to all mineral land rights except those rights granted under the Crown Lands Mines and Quarries Act passed in 1961 and the Mineral Act passed in 1976. These two acts have provisions similar to that set forth in the Mineral Holdings Impost Act.

The impost rate is:

- a) 35 cents per hectare in 1978,
- b) 55 cents per hectare in 1979,

- c) \$1.15 per hectare in 1980,
- d) \$1.95 per hectare in 1981, and
- e) \$3.00 per hectare in 1982 and subsequent years

The impost on a taxpayer may be reduced in each year by:

- i) Any rentals paid to the Crown in respect of mineral holdings.
- ii) Expenditures made by the taxpayer or a person on behalf of the taxpayer in respect of the mineral holding. These expenditures must be acceptable to and approved by the Minister of Mines and Energy and cover such items as prospecting, trenching, stripping, drilling and engineering evaluation reports.
- iii) Surrendering a portion or all of any holding not later than December 30th in the tax year.

Any impost payable is required to be paid within three months after the close of the calendar year or the fiscal year of the taxpayer.

There is a right of appeal to the impost of which the first lies with the Mining Tax Review Board and from the Board to the Supreme Court of the Province.

Persons interested in acquiring copies of this Act may contact the Taxation Division, Department of Finance or the Mineral Lands Division, Department of Mines and Energy.

## **2. Report of Federal-Provincial Tax Negotiations**

**Current Status:** A detailed account of the proceedings to date was given verbally by Dr. Robert Hutchinson, federal Department of Energy, Mines and Resources, and by Mr. Fred Hall, Ontario Ministry of Natural Resources. The text of Mr. Hall's report is contained in the appendix to committee No. 2.

At present the negotiations are at the stage where a draft report prepared by the federal Department of Finance has been circulated to the provinces for comments. A further meeting is scheduled for Wednesday, September 13, 1978, to discuss this draft.

**Discussion:** Industry expressed a desire to become more directly involved in the preparation of the report to ministers. The pros and cons of this possibility were discussed but no conclusions reached.

## **3. Transportation in the Mineral Industry**

This topic did not receive much discussion. Concern was expressed, however, about increased seaway tolls and escalating rail freight rates.

## **4. Mineral production income: How it is used by producers (Quebec example)**

A comprehensive report on this topic was presented by Mr. J.M.A. Gagnon. The report addressed the question "What are the economic impacts of the Quebec metal mining sector and who benefits from them?"

The text of Mr. Gagnon's report is contained in the appendix to committee No. 2.

## **5. Burden of environmental improvement requirements on the Mining Industry**

Dr. Tom Mohide of the Ontario Ministry led off discussion on this topic. He informed the committee that Ontario had recently issued a publication entitled "Investment Effects on the Mineral Industry of Tax and Environmental Policy changes: A Simulation Model".

This work was undertaken in response to the need to determine as accurately as possible the burden of environmental improvement requirements on the industry. As such, it should prove very useful to industry and all levels of government.

## **6. What can Provincial Governments do through policy and legislation to better ensure Canada's future as a metal producer in the 1980s**

### **General Comments**

- Changes in legislation requirements particularly tax,
- Changes should be kept at a minimum,
- Changes that do occur should be realistic and justifiable, and
- Consultation with industry should be emphasized.

### **Taxation**

- Uniformity,
- Stability,
- Minimization of complexity, and
- Capital gains tax particularly damaging to small exploration companies.

## **7. Mineral statistics**

**Decentralization**—Ontario reported that it had recently moved to decentralize its statistical collective function. The objective was to reduce the number of enquiries upon companies.

Confidentiality of the information supplied to governments arose as a topic for concern.

### **Report of the Federal-Provincial Committee on mineral statistics**

by J.S. Poyen

The committee met in Ottawa November 4, 1977.

The meeting reviewed the progress, to date, of the working group, and approved the direction of its work. In order to streamline the working group's varied program it was agreed to create five task forces, each charged with the responsibility for one work area; these are:

- The continuation of work towards a new valuation of base metal mine series,
- A review of the appropriateness of the census questionnaire as the vehicle for the collection of technical data,
- An inventory of data sources,
- An examination of the possibility of deriving detailed information of stockpiles (inventories) of mine products, and
- A review of the Metal Mine Questionnaire with the aim of reducing its length.

The work accomplished to date in these task force areas is outlined below:

**New valuation of base metal mine series:** At the October 1977 working party meeting, a report was made on the progress of this project, namely, the results of the analysis of the 1975 data, with estimates where required, for domestic mine shipments summed up at the industry and national levels. Even with the more detailed data resulting from the supplementary information added first to the 1974 census, data gaps still exist in producing a net valuation by metal series, particularly in the area of the integrated mines. However, delegates expressed their support for the continuation of this project, recognizing that it is a long term project. This support was also expressed at the November 1977 Federal-Provincial Meeting on Mineral Statistics. A proposal was submitted by Statistics Canada to outline the course currently being follow-

ed to work towards a net valuation series, and as resources allow, work is continuing.

For a future meeting, data will be prepared on a provincial basis for more meaningful discussions on the concepts and methodologies to be applied to generate a publishable series for net valuation of base metal mines.

**Review of the Census questionnaire:** Contacts were made with provincial agencies to ascertain if data of a technical nature, similar to those presently collected in the census, and consistent across provinces, were available in provincial statistical programs. This inquiry produced no positive results. Further, EMR users of the data, saw no particular advantage to surveying for these data on a separate questionnaire, since such a survey would have to be conducted annually to satisfy their purposes. Consequently, the conclusion from these enquiries was that no short-term alternative to the Census for the collection of these data is apparent.

**Inventory of data sources:** In an effort to develop a compendium of data sources, the task force has compiled an inventory of all Statistics Canada and EMR data sources in the mineral area. This inventory has been integrated into a computerized data base, and a demonstration of this system is planned for the coming federal-provincial committee meeting. The next step is to approach the Provinces with a request that they itemize mineral data series in their agencies, in order that these may be included in the program.

### **Examination of the possibility of deriving detailed information of stockpiles (inventories) of mine products.**

The task force considered the problem and agreed that "strategic planning" requirements for inventory data of this nature would best be satisfied if the monthly "Mineral Production" survey was modified to capture opening and closing stocks of mill products, at the mine site and elsewhere. The 1978 printing of this questionnaire (i.e. for use in 1979) will incorporate this recommendation.

### **Review of the annual metal mine questionnaire**

The Task Force agreed:

- (1) To omit the itemization of mining inputs. This has been incorporated in the 1978 printing. It was further recommended that an occasional survey be conducted every two or three years to collect the detail now being deleted in this area.
- (2) To restrict mining outputs (Section 8.1) to "product" and "destination", since data on metal contained therein were reported in the "supplementary" portion of the questionnaire. However, on further analysis in Statistics Canada, it was found that although a relationship did exist between these two areas for some B.C. operators, it had not been sufficiently well developed in returns from other areas of the country. Consequently, this proposal has not yet been implemented.
- (3) It was agreed that the "supplementary" portion of the Census, originally incorporated into the questionnaire in a manner by which the data could be collected for computer processing, was mainly responsible for the growth of the questionnaire. To alleviate this problem, it was agreed to revise this portion to appear as it did in its initial form, and that Statistics Canada will develop other means of transferring the data

from the questionnaire to the computer. The 1978 printing will reflect this proposal. I am advised that the Federal-Provincial Committee is not actively soliciting formal direction from the Mines Ministers' Conference at this time as their present workload is very onerous, but it would, nonetheless, welcome any comments which the conference may wish to make on the thrust of their activities to date. The next meeting of that committee is scheduled for November, 1978. If there are comments or items that Ministers wish to put forward at that time, they should be forwarded to me by October 16, 1978.

#### **8. Other business**

The following was presented at the meeting of Committee No. 3 and is included as a subject for this committee to complete the record.

Mr. Bob Green, Staff Representative with the Canadian Association of Industrial, Mechanical and Allied Workers presented the following statement expressing the disappointment of his Union:

"...with the failure of the federal and provincial governments to represent Canadian interests before recent U.S. International Trade Commission hearings on copper and zinc.

In both cases, the U.S. industry, aided by Canada's largest American union, the United Steelworkers of America, have lobbied for relief from imports.

In the case of zinc, the proposed remedy would have resulted in a serious decline in Canadian zinc exports to the U.S.

Fortunately, the ITC ruled against the U.S. producers' request in this case.

In the case of copper, however, the ITC has recommended a global quota on U.S. copper imports. This recommendation is now before President Carter. Such a quota could result in a serious decline in Canadian copper production, 20 per cent of which is exported to the U.S.

No representatives of any level of government in Canada appeared at these hearings to argue against these protectionist measures. And the evidence shows that the Steelworkers, who represent most Canadian copper and zinc workers, betrayed their Canadian members by supporting the U.S. producers.

Our union has written President Carter urging him to veto the ITC recommendation for a global copper quota. We hope the federal and provincial governments will lobby strenuously to have the proposed quota vetoed. Canadian unemployment is far too high as it is; we should not sacrifice more jobs here for the sake of increased copper production in the U.S.

In reply to Mr. Green's statement, Dr. W.G. Jeffery, Acting Assistant Deputy Minister (Mineral Policy), Department of Energy, Mines and Resources explained that earlier this year, following the submission to the United States International Trade Commission (USITC) of a petition by U.S. copper producers for import relief under Section 201 of the Trade Act of 1974, the Canadian Government made strong formal representations to the U.S. authorities about growing protectionism in the minerals sector and specifically about the copper situation and its potential effect on the Canadian industry. He said the matter was also raised with Vice-President Mondale when he visited Ottawa on January 17, 1978, and later on March 9, 1978 with

Treasury Secretary Blumenthal. Dr. Jeffery added that these representations have been underlined more recently by additional formal expressions of concern regarding the specific recommendations of the USITC.

Dr. Jeffery explained that while it is the policy of the Canadian government not to intervene publicly in hearings before the International Trade Commission, no opportunity has been lost to firmly register Canadian views with the U.S. administration. As is customary, these were conveyed to the USITC through normal diplomatic channels. He said that bilateral consultations are continuing with U.S. authorities and further appropriate steps will be taken as required to safeguard Canadian exports of refined copper to the U.S.A.

In a letter received after the conference, E.J. Docquier, National Director for Canada of the United Steelworkers of America, indicated that his union had made representation to the United States International Trade Commission, and in their testimony the Union specifically stated that imports of Canadian copper to the United States have not been, and are not now a problem. He took issue with the statement regarding the Steelworkers which appears in Mr. Green's submission.

## Committee No. 3

### Social

Chairman: James T. Fyles

Co-chairman: G.A. Jewett

## 1. Review of legislation enacted or proposed since the 1977 conference

### British Columbia

Amendments to the Mines Regulation and Coal Mines Regulation Act have been deferred to 1979.

### Northwest Territories

Jurisdictional discussion is ongoing with DIAND.

### Alberta

#### The Mines and Minerals Act—Exploration Regulations:

- (a) Exploration entailing the drilling of holes is prohibited in areas (designated by a schedule attached to the regulation) in which, historically, holes have flowed causing erosion, flooding and associated problems.
- (b) Exploration is forbidden in Restricted Development Areas or Water Conservation Areas established under the Department of Environment Act, where the use of the land in the Area for exploration is prohibited by a regulation under that Act.
- (c) Security deposits to be furnished upon request of the Minister (which request would be made if, for example, the program is a contentious program or is to be conducted in the alpine zone), and provides for the expending of all or a portion of the deposit on the location of the program where the permittee has not complied with the provisions re field operations in the Exploration Regulation or in his exploration approval.

### Saskatchewan

No new legislation has been enacted.

### Manitoba

A clean Environment Act has been enacted that provides for a 21-day closure of operations pending a court hearing.

### Ontario

Since 1969 and previously, the regulation of mining, including mining plants, was concerned with safety rules or operations, covering hoists, blasting, electrical, and protective equipment. The performance standards were set out in over 400 sections (comprising many sub-sections) in Part IX of the Mining Act. The Ham Report recommendation re legislation was that Part IX be repealed and replaced by a Mining Health and Safety Act, that the act be an enabling one containing general provisions and that specific standards of performance, dealing with health and safety be set out in regulations.

The Government of Ontario introduced Bill 139, an Act respecting employee's health and safety in 1976. This bill was put forth as an interim measure. It placed Part IX of the Mining Act under the Ministry of Labour which had responsibility for occupational health and safety on construction projects and in industrial establishments (as the Ham Report recom-

mended) and provided for the establishment of joint health and safety committees and worker safety representatives in those work places where the Minister of Labour so ordered. Bill 139 consolidated and revised the existing legislative provisions respecting the refusal of unsafe work in industrial establishments, construction projects, and mines and mining plants. Bill 70, presently under review was introduced in October, 1977. As introduced, it applied to work places that were regulated under the existing Safety Acts, e.g. construction projects, industrial establishments, and mines, with provision for its extension to other work places not included under these acts. The intention of the Bill is to embrace other work places as and when performance standards were developed and embodied in regulations.

In the Standing Resources Committee of the House, this approach was rejected and amendments were made applying the Bill to all work places.

Apart from this, Bill 70 in its thrust is considerably different than Ontario's past occupational safety legislation.

While it does provide for performance standards to be imposed by regulation in regard to machines, procedures and operations, it has significant provisions in regard to the work environment.

Apart from provisions requiring the establishment of joint health and safety committees, the Bill places considerable emphasis upon occupational health, regulations may prescribe that an employer do such things as:

- Establish an occupational health service,
- Keep records of the use and names of toxic substances,
- Keep records of workers' exposures to toxic substances,
- Give notice of the use or introduction into the work place of toxic substances,
- Establishing regular programs to monitor the work levels of toxic substances,
- Comply with standards of exposure to substances, and
- Medical examinations for workers (these are to be carried out in the case of regulated substances).

There is another feature of the Bill that permits a mining engineer or inspector to require a mine operator to satisfy the Mine Safety Branch that a mining method and mining procedures are proper and will not cause a hazard. Provision is made for pre-development review—onus left with the mine operator.

The Bill permits regulations requiring workers in certain areas or performing certain tasks to be competent in the work.

A certification program for miners will be adopted, which will set qualifications and training programs.

### Quebec

There are no changes to report at this time, however, a White Paper will be published for discussion in about a month.

## **Newfoundland**

An Occupation Health and Safety Act is being enacted that will consolidate existing legislation under the Ministry of Labour on a phase-in basis.

Some changes in regulations respecting truck haulage have been implemented and the policy adopted is very similar to that in Alberta.

## **2. The Impact of the Mineral Sector on Regional Development**

A comprehensive paper on this topic was presented by Mr. Paul J. Bourassa. The text of Mr. Bourassa's report is contained in the appendix to Committee No. 3.

**Discussion:** Some general discussion of Mr. Bourassa's paper highlighted the need for industry and government to do everything possible to get the message to the general public of the importance of the mining industry in regional development.

The cost of the implementing of environmental legislation was discussed and the need for benefit-cost appraisal on a much larger front was noted in the context of reducing roadblocks to regional development.

## **3. Social Considerations in Remote Mine Sites Development**

The Ontario Labour Union brief was not presented as originally planned. Some general discussion centered on the pros and cons of town development at the mine site versus a centralized approach.

Constraints noted included:

- Climate as an impediment to commuter options,
- The risk of commuting, especially by air, and
- The social impact of long commuter operations.

The representative of the Alberta Oil Drilling industry remarked on the success of the Arctic commuter operation from Edmonton. It is intended that a report on this operation will be tabled at the 1979 conference.

4. Not discussed.

## **5. What can Provincial Governments do in the social field to better assure Canada's future as a metal producer in the 1980s.**

There was general discussion respecting the need to develop consistent provincial tax policy for social capital investment.

On the subject of provincial tax policy pertaining to social assets, the group agreed to recommend to the Ministers that:

*There is a legitimate need to ensure that provincial tax policy provides for the deductibility of capital development and operating costs for social assets.*

## **6. Other Business**

A paper was presented by Bob Green of the Canadian Association of Industrial, Mechanical and Allied Workers. The text of Mr. Green's paper is contained in the appendix to Committee No. 3.

**Discussion:** Discussion following Mr. Green's paper noted B.C.'s excellent safety record and that of the Yukon Territories. Those speakers familiar with the problem strongly opposed the recommendations in Mr. Green's paper stressing the strengths of the present jurisdiction and the fear that under W.C.B. the levels of safety inspection would deteriorate.

A Quebec representative of the Steelworkers Union expressed concern over the need to unify safety legislation under one jurisdiction as much as possible considering that some specialty areas will always have to be recognized.

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## **Closing plenary session**

## **Séance plénière de clôture**

Remarks by

**The Honourable James A.C. Auld**

Ontario Minister of Natural Resources

To the closing plenary session

It's difficult to realize that only 30 hours have gone by since I introduced myself to you at the opening plenary session yesterday morning. For me, as a newcomer, it has provided a learning experience I couldn't have gained otherwise in as many weeks. But what is equally gratifying is that I have heard from many veterans of these conferences the opinion that this year's gathering provided a most successful forum of useful and candid dialogue between industry and government on problems of mutual concern.

As I've said before, I don't take any credit for that success myself; the real credit, of course, belongs to you, the delegates, for the support you have given, the ideas you have provided, and your willingness to engage in real communication with each other. That's been as true for the delegates from other provinces as for the delegates from the mining industry, including the labour side, whose contributions to the proceedings everyone of us will agree have been invaluable. I particularly welcomed, as well, the presence of representatives of the federal government. They were here as observers, so I won't embarrass them by accusing them of productive co-operation.

Nevertheless, I am strongly encouraged to believe that, particularly since the meeting of first ministers held in Ottawa earlier this year, there is firm evidence of a considerably greater willingness to take a very realistic attitude to the needs, to the achievements, and to the importance of the Canadian mining industry.

I was impressed, as I am sure most of you were, about the effect of taxation on mining being perhaps the major concern during these deliberations. As one of my staff said, whatever the main topic was in a discussion, the talk soon turned to financial policy. On the government side, we are aware of this concern, and as I and some of my fellow ministers suggested yesterday, something needs to be done to improve matters, difficult and complicated though the task will be.

In fact, tomorrow in this same hotel there is to be a federal-provincial meeting on taxation policies, on a staff level, which is part of a continuing process. And it is a prelude to something I am happy to mention to you—it is anticipated that a federal-provincial conference of Finance Ministers and Mines Ministers will be called by Mr. Gillespie sometime in the near future.

Some of the effective dialogue I mentioned took place during the three committee meetings held yesterday afternoon, and in the sub-committee meetings during the previous days whose findings were fed into the committees. The minutes of the three major committees are ready for you to pick up at the information desk of the conference in the main mezzanine lobby. And right now, I'd like to take a minute or two to give quick highlights of the committee meeting reports.

**From Committee No. 1-The Technical Commit-**

**tee**—came the recommendation that the provincial ministers collectively request the federal government to either completely repudiate or substantially rewrite Bill C-14. This action was an expression of unanimous support in the committee for the lead taken by Saskatchewan in dealing with the proposed federal bill and its potential infringements on provincial rights.

Another item from that committee was the request from the sub-committee of Chief Inspectors that it be allowed to continue to meet with the Ministers of Mines and be part of this annual process, even though in some provinces, the responsibilities of the Chief Inspectors have been restructured into ministries or departments of labour.

**From Committee No. 2-The Financial and Statistical Committee**—In addition to the usual concerns about taxation, there was an emergence of increased awareness and concern about environmental costs in mineral resource development. In this connection, as I indicated in my opening remarks yesterday, my ministry staff has produced a unique paper which may be of assistance to anyone involved. I'd like to remind you of our mineral policy background paper no. 5, titled "Investment Effect on the Mineral Industry of Tax and Environmental Policy Changes". I am told that the simulation model presented in this paper is a tool that is not available in the United States, for example. And we naturally hope that it can be of real service to you.

**From Committee No. 3-The Social Matters Committee**—came the recommendation that social costs including housing, recreational, water and sewage costs be fully credited in business and taxation policies by any of the provinces.

One of the interesting presentations to that committee was from the Canadian Association of Industrial, Mechanical and Allied Workers (or CAIMAW), the open pit mining union from British Columbia, pleading as it did the case of appropriate jurisdiction for mining health and safety in that province.

Overall, in my position as chairman of the conference, I am most grateful to the committees and sub-committees and those who led them and staffed them for the contributions they made to stimulate the discussions and the dialogue that ensued.

It was hardly a matter for surprise, of course, that this conference was virtually unanimous in saying that present environmental regulations are unrealistic and costly. And I know that it must be temptingly easy for any representative of the communications media to represent any proposal to alleviate the burden, either of excessive environmental control regulations or excessive taxation burdens, as proposals only intended to assist, and certainly only likely benefit, mine owners.

A reporter doesn't need to talk to some miners and their families, though, to know that that just isn't true.

Mine workers are as directly affected by such measures as the mine owners, and are usually faced with even fewer alternatives.

But that isn't the full story, by any means. Miners depend on mining companies for their employment. But mining companies also have to depend on investors, Canadian investors, American investors, and European and other outside investors, for their capital.

What inducement do we offer to make a potential investor decide to invest in a company overburdened with costly regulations and taxes, as well as being at the mercy of violently-fluctuating market demands, when the investor could choose any other safer, less-harassed and more profitable home for his money? Why should present investors continue their mining investments?

Without investors, it isn't just the mine workers or the mine owners who will be hurt. Because of the unique part that mining plays in the Canadian economy, and its great productivity ratio, compared to other sectors, weakness in our mining industries seriously hurt every resident in Canada.

But we are not pleading those considerations as a reason why the mining industry should be allowed to behave with total irresponsibility toward Canada's natural resources or the health of its people. As it happens, the Canadian mining industry today is fully conscious of its social responsibilities, and provincial mining ministers and ministries will always be aware that they are accountable to the people of their provinces for the actions of those industries. So what the industry is pleading is only that responsibility, realism and comprehension should govern the application of those regulations and those taxes.

I do not want to be misunderstood. We know there are environmental hazards. We know they must be carefully watched. And that measures of protection are necessary.

But there is considerable evidence that initial recognition of previously-unknown hazards created a panic reaction leading to control measures far more stringent than those imposed in other equally advanced countries, and almost certainly, far more severe than the situation actually required.

But there is another damaging misapprehension to be corrected, and that is the widespread impression that practical and economically possible technological solutions already exist for every environmental problem encountered. In reality, no entirely satisfactory solutions have yet been found in some cases, and in others the solutions cannot be applied at an economic cost. Against all this though, is the very large and improving level of improvement already achieved, using available and affordable technology.

The basic reality that must be understood, however, is that anything approaching the standard of life Canadians have come to expect, and which we all take for granted, is not yet compatible with a totally pure environment. Accordingly, if Canadians wish to continue to enjoy that standard, we must come to accept that Canada—all of Canada—is one vast mining town, and adjust ourselves to living in it. After all mining, forestry and other land-based resource industries, including agriculture, are absolutely vital to a prosperous Canada.

One of the topics that was discussed at this conference which greatly interested me was that of finding ways to stimulate personal investment in mining shares, including those of junior mining com-

panies. I don't have any doubt that some degree of regulation is necessary to make sure the investor gets a fair break. But after hearing the discussions, I don't have much doubt either that some provinces, and I certainly don't exclude our own, might well take another look to see if they haven't considerably overprotected the investor at the expense of the market.

A look at the staggering amount of money, running into billions of dollars each year, Canadians are prepared to "invest", if that's the right word, in provincial and federal lotteries makes it clear that most of us welcome an affordable gamble. And a look at the kind of odds that the public is prepared to accept to allow the promoters to make the kind of profit they do, fills me with awe and amazement. I know those profits are all put to extremely good purposes.

But I have to wonder if all those purposes are necessarily better than helping to stimulate an industry that provides Canada's lifeblood. And I can't help thinking it would offer the punters much better odds.

I've covered everything I wanted to say, except to express again, on behalf of Premier Bill Davis and the rest of the Ontario Government, our very great pleasure in having you here, and my own personal thanks as well to each of you for the support you have given me.

I'm extremely grateful too, to Dr. Keith Reynolds and other members of my ministry staff for the back-up they have given me, and I think you will join me in congratulating those who were responsible for getting this show on the road under rather unusual conditions, with a last-minute substitution of ringmasters!



## Appendices

## **1. Federal/Provincial Mineral Taxation Review Update**

by Fred Hall

At the Federal-Provincial Conference of the Ministers of Mines in January, 1978, it was recognized that the Canadian mining industry was in a serious situation. The opinion was that one of the major causes could be traced to taxes. It was therefore agreed that the representatives of the appropriate provincial and federal departments should meet, investigate this condition, and prepare a review of mineral taxation for presentation to the Ministers of Mines of the various provinces.

The first meeting was convened in Toronto on May 12, 1978, and chaired by Dr. E.P. Neufeld, federal Assistant Deputy Minister of Finance. This was the first of a series of meetings held with the provinces during May and June for the purpose of hearing the various view points from each province. Dr. Neufeld's department prepared a summary for a meeting of the provinces held in Ottawa on July 27, which was comprised of financial and mining tax representatives of the various provinces. He reviewed the discussions and most of the delegates tabled position papers.

A first draft was compiled by Dr. Neufeld's department and forwarded to the respective provincial representatives on August 25, with a request to submit their comments. A second draft is to be ready for discussion on Wednesday following this conference.

It is anticipated that the finished report will be in the hands of the ministers before Christmas.

It is not appropriate at this time to further comment on the report as it has not yet been finalized.

## **2. What are the Economic Impacts of the Quebec Metal Mining Sector and Who Benefits from Them?**

By J.M.A. Gagnon

It is indeed a great honour to have been invited to address such a select audience, on a so important subject for all of us, that is: "What are the economic impacts of the Quebec metal mining sector and who benefits from them?"

The mineral industry in Quebec is most important to the economic life of our province, and if fuels are excluded, its production occupies the second rank in Canada, with a total value of \$1,631,618,000, after Ontario.

The Quebec territory is in fact the birth place of the mining industry in Canada; the first mining company "La Compagnie des Forges", was authorized by Louis XIV, in 1737, to work and smelt iron ore in the Seigniory of St. Maurice, near Three Rivers.

A look at the old mining and geological reports is sometimes most instructive about the mining activities and markets in those early days. For example, between 1879 and 1883, 7,900 ounces of

gold were produced, totaling a value of \$40,262 which gives an approximate value of \$5.00 per ounce of gold. On the other hand, these reports reveal that in 1864, the price of copper reached 59¢ a pound. However, in the 1880's this price dropped to a more realistic level, that is 11¢ a pound.

It is also interesting to note that before the end of the 19th century, the federal government, in order to encourage the production of pig iron, was offering a bonus of \$1.00 per net ton of pig iron produced in Canada from Canadian ore. As you can see, we are not pioneers in asking for incentives from our governments.

Finally, permit me to quote an extract from a geological report dated 1890, by the Commission of Crown Lands, to the Lieutenant-Governor of the Province of Quebec, about a territory corresponding to the Northwestern Quebec region. Here is the extract:

"Ideas, more or less erroneous, are generally entertained regarding the geography or rather the superficial geology of the province of Quebec: because the estuary of the St. Lawrence is bordered by two ranges of mountains, it is concluded that the country traversed by these heights is everywhere mountainous, rocky and barren; and, in very many minds, the notion is rooted that we have no good arable lands outside of the immediate valley of the great river, which does not amount to a fourth of the total extent of the province. I trust that the present publication will remove these false impressions, since it clearly establishes that between these ranges of hills, there are immense plains, with a soil, to say the least, as rich and as easy to cultivate as that of the great St. Lawrence valley itself, which is designated by our geologists under the name of the Champlain regions.

At that time, the now Abitibi region was considered as a great region having great agricultural possibilities and, I suppose, that the efforts made between 1920 and 1930, by the Quebec government to colonize this region, must have been based on similar reports. To a certain extent, the report was right about the good arable land, the only aspect overlooked was the short growing season of the region.

It soon became evident that the extraction of mineral orebodies, gold and copper, discovered in northwestern Quebec during this period, helped the farmers to survive and, in this sense, one can say that mining saved the agriculture in this part of the country.

**Economic Impacts:** This brings me to talk about some of the most important characteristics of our mineral industry and its important impacts on the economic life of our province.

As you all very well know, the mining activities have to take place where you find the orebodies. This characteristic necessarily results in the fact that huge investments have to be assigned to the development of the territory after the discoveries

have taken place.

Apart from the important capital spent for mineral exploration of new regions and for the development of the discoveries made, when the decision is made to go ahead with the extraction of the orebodies discovered, tremendous amounts of money have to be spent, not only in the erection of mine plants and equipment, but also in putting in place an infrastructure to reach the region concerned and to get it equipped with the necessary housing and services in order to assure a normal social environment for the workers involved.

This involves the construction of roads, railways, airports, harbour and all the other transportation facilities not only normally used for handling mining material, but also used for all other activities taking place in these regions, like forestry, farming, tourism, fishing, hunting, camping areas, etc.

It is difficult to estimate the amount of the global investments in these infrastructures, surely several billions, of which some have been made by governments, while the majority has come from private investments.

To simplify, more than 800 miles of roads and 1,000 miles of railroad have been built to serve primarily the Quebec mining industry, while harbour facilities have been erected in five places along the St. Lawrence River for the same purpose, among them, Port Cartier and Sept Isles which handle more tonnage than the Montreal harbour.

During the last 50 years, the mineral industry has also been responsible for the development of not less than 15 towns in the Province of Quebec, with a total population of over 137,000 people. These are Malartic, Noranda, Joutel, Matagami, Val d'Or, Chibougamau and Chapais, all situated in north-western Quebec; Murdochville in the Gaspesian Park and, on the North Shore and Labrador, Havre Saint Pierre, Port Cartier, Gagnon, Sept Isles, Schefferville and the latest, Fermont. (See table 5)

The mining companies have spent, for the establishment of these towns, in the order of half a billion dollars, divided about equally between investments in home building, while the other half was invested in recreational and cultural facilities, in schools, churches and hospitals, as well as roads, streets, sewers, aqueducts and other municipal services. The latest one, Fermont alone cost some \$100,000,000.

So, we can easily say that the majority of these 137,000 people in the mining towns depend for the livelihood, directly or indirectly on the jobs of the 18,000 mine workers.

For example, during the four-month strike of the I.O.C. and Q.C.M. employees last spring, the service industries in the Sept Isles region were obliged to lay-off more than 2,000 of their workers due to a lack of business resulting from the strike. Table 5 will give you a better idea of the main mining towns in Quebec.

It is important to mention that some other centres in the province profit directly from the extraction of mineral resources; Sorel for example, where a few thousand workers are employed in the refining of the titanium ore coming from Havre Saint-Pierre and in the manufacturing of goods using the refined products, that is the titanium slag and the Sorel metal.

In the refining field, several thousand workers are also employed in the Montreal areas, at Canadian Copper Refiners, Canadian Electrolytic Zinc, and in the manufacturing field, Noranda Metal

Industries, Canada Wire and Cable, Wire Rope Industries, etc.

It is very difficult to evaluate the entire driving effects of the extraction of mineral resources, either as services to the mining operations or in the processing of minerals. It seems, however, that the ratio generally accepted is that one worker directly employed in mining, generates six other jobs in related services and industries.

One should not forget either that 60 per cent of our Canadian mineral production is exported, which is most important for our balance of payments. Quebec is far above the national average.

The mining industry being a very high capital-intensive industry, generates numerous financial activities in borrowing money, paying interests and dividends, etc. It is also a strong stimulant for local and national trade and commerce due to its important sales of mining products and purchases of services and equipment. In 1977, metal mining alone, in Quebec, has generated over \$2 billion in transactions, as sales or purchases.

**Who Benefits from Mining:** These important activities profit different sectors of our population. First, the employees involved directly in the mining industry and those employed in related services and industries. It also profits the suppliers, the manufacturers and the services, of which 60 per cent are operating in Quebec, 30 per cent in the other provinces and 10 per cent outside Canada, according to the 1977 survey made by our association. For metal mining only, this represents an amount of more than half a billion dollars.

The governments—local, provincial and federal—greatly profit from our mineral industry. In 1977, the equivalent of 32 per cent of the mineral production value returned directly or indirectly to the three levels of governments as contributions to the public finance. However, the portion distributed to the shareholders was much more modest since, in 1977, it represented only 7.0 per cent of the mineral production value for the Quebec metal mining industry.

Finally, the population at large profits extensively from the mining activities since the opening of new territories and the erection of new infrastructures are necessary for the development of tourism, fish and game, in addition to any other outdoor activities and business generated.

In order to give you a more precise idea of the economic impact of the metal mining industry in Quebec, for the different groups mentioned above, we have prepared a few statistical tables which show amounts of money spent by the industry in salaries, taxes, services, supplies, etc. We have not been able to resist the temptation to show also the enormous increase in these financial items over the past 10 years. (See Tables 1, 2, 3 and 4.)

These data are collected each year by the Quebec Metal Mining Association from its members and compiled by an accounting firm, so that the confidentiality of the companies is respected.

You have to take these figures as a minimum, since the answers to the questionnaire represent approximately 90 per cent of the total Quebec metal mining industry. The asbestos sector and the construction materials sector are not included in these compilations.

Finally, permit me to add that one mining company alone, operating in Quebec for the past 20 years, has contributed over this period, to the financing of

municipal governments, an amount exceeding \$32 million, to the financing of provincial government, in taxes and social costs, over \$83 million, in addition to the \$41 million directed to the federal government

These cumulative amounts added to the taxes withheld from the employees (\$152 million) and the tax content of new investments (\$195 million) reached, for this 20-year period, over half a billion dollars.

For 1977, only, these different items amounted to \$62 million which means the ever-increasing portion of the production value devoted as contribution to the public finance. Needless to say, I suppose, this company is the one for which I am working, Quebec Cartier Mining Company.

To conclude, it is, I think, most important to keep in mind that for the Province of Quebec (as well as the other Canadian provinces) where a population of 6,000,000 people live on a territory of 600,000 square miles, very rich in natural resources (forest and minerals) the economic and industrial activities

should lie first on the exploitation of these resources and on the related services and industries. Therefore, we cannot but strongly recommend to both levels of governments, federal and provincial, to promote by all means, the mineral exploration, first in our own province, Quebec, and if there are incentives left in the government pockets, in all Canadian provinces and territories.

Table No. 1 **Employees' Salaries & Benefits**

Employers' Share	1967	1974	1977	% increase 1967-77
<b>Mineral production</b>	\$436,943,476	\$683,093,861	\$767,696,471	75.7%
<b>Number of employees</b>	15,762	16,505	16,576	
<b>Total payroll (including holidays &amp; vacation pay)</b>	103,342,340	224,904,647	327,090,342	
Salary/employee	6,556	13,627	20,336	210.2%
<b>Fringe benefits (excluding holidays &amp; vacation pay)</b>	4,763,700	12,079,449	18,850,300	
<b>Per employee</b>	302	732	1,137	276.5%
medical & life insurance				
pension plan				
medical examination				
transportation				
townsite support				
<b>Social costs</b>	4,239,400	12,364,542	24,826,500	
<b>Per employee</b>	269	750	1,498	456.9%
Quebec Penions Plan				
Health Insurance				
Workmen's Compensation				
Minimum Wage Levy				
Unemployment Insurance				
<b>Grand Total</b>	\$112,345,400	\$249,348,620	\$370,777,140	
<b>Per employee</b>	\$ 7,128	\$ 15,108	\$ 22,368	222.3%
% of production value	25.7%	26.5%	48.3%	

Table No. 2-(A) Contribution to Public Finance—from Employers

	1967	1974	1977	% increase 1967-77
Mineral production	\$436,943,476	\$683,093,861	\$767,696,471	
Number of employees	15,762	16,505	16,576	
<b>1. To: Municipal authorities</b>	<b>6,798,705</b>	<b>9,505,071</b>	<b>13,898,849</b>	
Real estate tax—municipalities, school, water, garbage & sewer taxes—				
Grants & donations to municipalities	1,793,702	1,134,272	1,242,013	
<b>Total \$</b>	<b>8,592,407</b>	<b>\$ 10,639,343</b>	<b>\$ 15,140,862</b>	
<b>Per Employee \$</b>	<b>545</b>	<b>\$ 645</b>	<b>\$ 914</b>	<b>67.7%</b>
<b>2. To: Provincial authorities (Quebec)</b>	<b>21,073,853</b>	<b>51,558,745</b>	<b>37,312,157</b>	
Duties upon mines, Corp. tax on income, on capital and place of business, retail sales tax, gasoline tax (net of refund)				
<b>3. To: Other Provinces</b>	<b>4,917,705</b>	<b>20,502,336</b>	<b>25,777,269</b>	
<b>4. To: Federal authorities</b>	<b>16,095,891</b>	<b>38,692,930</b>	<b>17,073,222</b>	
Income Tax				
Sales tax (net of refund)				
<b>5. Social costs (employers' share)</b>	<b>4,239,395</b>	<b>12,364,542</b>	<b>24,826,458</b>	
<b>Contribution to public finance from employers:</b>				
a) Taxes on profits	32,768,185	85,244,815	34,120,867	
Per employee	2,079	5,165	2,058	
% of production value	7.5%	12.5%	4.4%	
b) Added costs—taxes and social costs	22,151,066	48,513,080	86,002,090	
Per employee	1,418	2,940	5,188	
% of production value	5.1%	7.1%	11.2%	
<b>Grand Total (a + b) \$</b>	<b>54,919,251</b>	<b>\$ 133,757,890</b>	<b>\$ 120,122,950</b>	
Per employee	\$ 3,485	\$ 8,104	\$ 7,247	107.9%
% of production value	12.6%	19.6%	15.6%	

Table No. 2-(B) Contribution to Public Finance—from Employees & Shareholders

	1967	1974	1977	% increase 1967-77
Value of mineral production	\$436,943,476	\$683,093,861	\$767,696,471	
Number of employees	15,762	16,505	16,576	
<b>1. Taxes &amp; fees withheld from employees:</b>	<b>15,122,037</b>	<b>59,851,158</b>	<b>98,083,854</b>	
a) Income tax				
b) Social costs				
c) Sales tax (withheld by the employer only)				
<b>Per employee</b>	<b>960</b>	<b>3,626</b>	<b>5,917</b>	<b>516.8%</b>
<b>2. Taxes on dividends &amp; interests</b>	<b>4,904,389</b>	<b>1,953,447</b>	<b>3,047,714</b>	
<b>Total 1 + 2</b>	<b>\$ 20,026,426</b>	<b>\$ 61,804,605</b>	<b>\$101,131,568</b>	
% of production value	4.6%	9.1%	13.2%	
Contribution from employers	\$ 54,919,251	\$133,757,890	\$120,122,950	
Total contribution from employers & employees	\$ 74,945,677	\$195,562,495	\$221,254,518	
<b>Per employee</b>	<b>\$ 4,555</b>	<b>\$ 11,849</b>	<b>\$ 13,348</b>	<b>193.1%</b>
<b>% of production value</b>	<b>17.2%</b>	<b>28.6%</b>	<b>28.8%</b>	
Tax content in new investment	15,750,000	35,247,766	22,954,571	
Grand total contribution to public finance	\$ 90,695,677	\$230,810,250	\$244,216,088	
<b>Per employee</b>	<b>\$ 5,754</b>	<b>\$ 13,984</b>	<b>\$ 14,733</b>	
<b>% of production value</b>	<b>20.7%</b>	<b>33.8%</b>	<b>31.8%</b>	

Table No. 3 Statistical Data on Current Operations

	1974	1977	% increase decrease 1974-77
1. Mineral production	\$683,093,861	\$767,696,471	
2. Number of tons extracted	45,551,573	51,315,566	
Value per ton—	15.00	14.96	
3. Total payroll & fringe benefits	247,818,020	345,940,640	
Per ton—	5.44	6.74	+23.9%
4. Social costs	12,364,542	24,826,500	
Per ton—	0.27	0.48	+77.8%
5. Added costs—taxes & fees	34,531,615	61,182,643	
Per ton—	0.76	1.19	+60.0%
6. Services, repair parts & supplies	227,941,620	239,475,600	
Per ton—	5.00	4.67	— 6.6%
Included (Cost of electrical power)	25,084,558	30,057,398	
in No. 6 (Cost of industrial environment)	11,226,984	16,524,027	
<b>3+4+5+6 Total per Ton No. 1 \$</b>	<b>11.47 \$</b>	<b>13.08</b>	<b>+14.0%</b>

**Note No. 1—**The difference is used to defray administration and head office expenses, interest on investment, taxes on profits, re-investment in new projects and mineral research and whatever is left is distributed to shareholders.

Taxes on profits	\$ 85,244,815	\$ 34,120,867	
Per ton	\$ 1.87	\$ 0.665	— 64.4%

Table No. 4 Statistical Data on New Projects & Mineral Research

	1974	1977	% increase decrease 1974-77
Value of mineral production	\$683,093,861	\$767,696,471	
Number of tons extracted	45,551,573	51,315,566	
<b>1. Capital expenditures:</b>			
For current operations	27,556,271	75,586,022	+174.3%
For new projects	166,220,659	39,186,874	— 76.4%
<b>Total</b>	<b>\$193,776,930</b>	<b>\$114,772,896</b>	<b>— 40.8%</b>
<b>2. Exploration expenses</b>	<b>25,182,716</b>	<b>21,794,496</b>	<b>— 13.5%</b>
<b>3. Development expenses</b>	<b>44,623,712</b>	<b>34,661,898</b>	<b>— 22.3%</b>
<b>3+4</b>	<b>Total \$ 69,806,428</b>	<b>\$ 56,456,394</b>	<b>— 19.1%</b>
Per ton extracted	1.53	1.10	
Percentage of production value	10.2%	7.3%	
Dividends paid (No. 1)	96,551,902	54,357,818	— 43.7%
Per ton extracted	2.12	1.06	

**Note No. 1—**The dividends paid do not necessarily correspond to the after tax profits.

Table No. 5 Mining Towns Established in Quebec Since 1930

Name of Town	Decade of Foundation	Population
Rouyn-Noranda	Thirties	20,000
Val d'Or-Bourlamaque	Thirties	23,000
Malartic	Thirties	6,000
Cadillac	Thirties	3,000
Chibougamau	Forties	10,000
Chapais	Forties	4,000
Sept-Isles	Fifties	32,000
Hâvre St-Pierre	Fifties	3,500
Schefferville	Fifties	4,300
Murdochville	Sixties	4,400
Gagnon	Sixties	4,000
Port Cartier	Sixties	12,000
Matagami	Sixties	4,800
Joutel	Sixties	1,000
Fermont	Seventies	4,500
		137,000

## **1. Impact of the mineral industry on regional development—the North Shore of the St. Lawrence River and iron ore.**

by Paul J. Bourassa

It is an honour to have been invited to talk on regional development as brought about by the mineral industry, and in conclusion, express my views as to whether or not Canada has a future as a metal producer during the 1980s.

More specifically, my talk will cover the burgeoning effect that the development of the vast iron ore reserves, as contained in the Quebec-Labrador Trough, has had on that part of the North Shore of the St. Lawrence River situated between the Manicouagan River and the Moisie River.

The oldest settlement on that part of the North Shore is Sept-Isles, which originated as a trading post in the late 1600s, and developed as a fishing village of approximately 1,200 people. Across the bay from Sept-Isles, a whale-oil factory operated for some 30 years until 1906. Further up to the west along the shore, the Clarke brothers put up a ground wood mill that operated between 1908 and 1966. To the west, the settlements of Shelter Bay, Pentecote, Trinity Bay, Godbout and Franquelin were settled between 1890 and 1920 by the pulp and paper companies to supply pulp wood to their mills along the St. Lawrence in Quebec and in Ontario.

Summer transportation was by boat, whereas winter transportation, whenever mandatory, was by dog-sled. Communication with the outside world was by the telegraph line built by the federal authorities in the late 1800s all along the North Shore.

A bold development came when Colonel Robert McCormick of the Chicago Tribune decided, in 1936, to build a newsprint mill, the town of Baie Comeau and a hydro-electric power generating plant at the site known today as Manic 1 on the Manicouagan River.

Even though this land was nicknamed by Jacques Cartier on his second voyage, "The land that God gave to Cain", one must remember that he only saw it as a sailor would—from his ship. The first mention, in written form, of abundant iron, can be traced back to 1870 in the journey logs of Father Louis Babel, an Oblate missionary to the Montagnais and Naskapis Indians, who trapped as far north as 400 miles from the St. Lawrence.

The first professional mention came as a result of the Geological Survey of Canada reconnaissance of that hinterland by Dr. A.P. Low, between 1892 and 1894. Dr. Low's report recommended thorough prospecting of the region to assess the economic importance of the iron bearing formation running north and starting at the headwater of the Moisie River, some 230 miles inland.

Dr. Low's recommendation was heeded only when it became apparent that the direct shipping

ores of the Marquette and Mesabi iron ranges showed less than 20 years of life.

Some minor amount of prospecting was done as early as 1937, but the Second World War postponed these efforts until 1946 when large scale exploration was launched. The exploration results fast became a reality with the formation of the Iron Ore Company of Canada and the announcement of its decision to develop the important iron ore deposits it had outlined on the mining concessions leased from the Quebec and Newfoundland Governments, and located in the Knob Lake Region, some 360 miles north of Sept-Isles, on the shore of the St. Lawrence River.

This project called for:

- (a) A 360-mile railroad joining the mine to the St. Lawrence;
- (b) Ore terminal, and docks in the natural harbour of the Bay of Sept Isles, to allow stock piling and ship loading at an annual rate of 10,000,000 tons;
- (c) Construction of the towns of Schefferville and Sept-Isles, to accommodate permanent employees, their families and service support personnel;
- (d) Construction of two hydro-electric generating stations, one for Schefferville and the mine, a second one for Sept-Isles and the ore terminal and dock;
- (e) Open pit mine development for operation on an eight month basis on account of freezing problems with direct shipping ores;
- (f) Construction of crushing, screening and train loading facilities at the mine site; and
- (g) The nerve-racking logistics of a continuous air lift, and winter tractor trains to allow work to proceed from both ends to meet a four-year construction schedule.

Other mine owners and steel producers were busy with research and development of concentrating and agglomerating technology to market the large tonnages of low grade, very fine grained taconites left on the Marquette and the Mesabi iron ranges after the depletion of the direct-shipping ore reserves. Notwithstanding this, the Oliver Mining Division of U.S. Steel embarked on an extensive exploration and prospecting program to assess the presence of coarse-grained ores suitable for agglomeration by sintering. That would be amenable to concentration by gravity using Humphrey spirals. The program covered the southwest part of the Trough located between Manicouagan Lake to the west and the Quebec-Labrador border to the east.

Between 1952 and 1959, over 1,400 claims were staked to allow geological and geophysical work, diamond drilling, bulk sample and pilot plant work. These efforts were also successful as evidenced by the incorporation of Quebec Cartier Mining Company and the announcement of its decision to develop the specular hematite deposit at Lac

Jeannine, in the most south westerly part of the Trough, some 190 miles northwest of Shelter Bay (to become Port Cartier, on the shore of the St. Lawrence River).

The project comprised:

- (a) A 200-mile access road linking the mine site with the North Shore of the St. Lawrence River;
- (b) Development of the open pit mines to operate on a year-round basis, to feed;
- (c) An iron ore concentrator having an annual capacity of 8,000,000 tons of 66 per cent Fe—specular hematite concentrate;
- (d) The construction of the towns of Gagnon and Port Cartier;
- (e) An all-season harbour, carved out of solid rock, capable of berthing ships of the 150,000 ton class;
- (f) A one hundred and ninety-one mile long railroad to bring the concentrates to the waterways;
- (g) A hydro-electric power generating station for Gagnon and the mining and concentrating operations; and
- (h) All ancillary facilities for administration operation and maintenance to support the first year-round mining operation in northeastern Quebec.

New agglomeration technology, increased market demands and the existence of the railroad linking Schefferville to Sept-Isles led the Iron Ore Company of Canada, in 1962, to develop its important low-grade iron ore reserves located at Carol Lake, Labrador, complete with a power generating station at Twin Falls, a concentrator, a pellet plant, and the town of Labrador City. An initial production rate of 12 million tons annually was expanded to 20 million tons annually in 1972.

The existence of that same railroad permitted the development, between 1962 and 1965, of Wabush Mines Ltd's Scully Mine, located four miles west of Carol Lake, at an annual production rate of 5,000,000 tons, complete with a concentrator and the townsite of Wabush, Labrador, and a pelletizing plant, ore dock and ship loading facilities at Pointe-Noire, across the bay from Sept-Isles.

Between 1970 and 1972, depletion of the high-grade direct shipping ore from Schefferville led the Iron Company of Canada to build a concentrating plant and a pelletizing plant at Sept-Isles with an annual production capacity of 6 million tons, along with increased ship loading facilities and docks capable of accommodating ore carriers of up to 240,000 tons.

During this time, the Quebec Cartier Mining Company was also faced with increased market demands for its coarse grained product, along with the eventual depletion of its Lac Jeannine reserves, and therefore decided to develop, between 1970 and 1976, the important Mount Wright deposit at an annual rate of 18,000,000 tons of concentrate. This development used the Port Cartier—Lac Jeannine railroad line as extended over 86 miles and comprised a total new facility with the Town of Fermont for 5,600 people at the north end, an increased dumping, stock piling and ship loading capacity at Port Cartier.

The latest development in that region was the acquisition by Sidbec-Normines of the First Lake reserves, and the Lac Jeannine installation from Quebec Cartier Mining, to mine at Fire Lake, concentrate at Lac Jeannine, and pelletize at Port Cartier, 6,000,000 tons of concentrate annually. This development was completed by the end of 1977.

As you can readily see on the accompanying location map, the development of the iron ore deposits contained in the Quebec Labrador trough has had, over the last twenty-five years, a very healthy impact on that part of the north shore of the St. Lawrence, through capital investment of over \$3 billion by the private sector, and the creation of some 12,000 direct jobs yielding a salary mass well above \$250 million annually.

Out of these outlays of capital came the creation of five new modern towns: Schefferville, Gagnon, Labrador City, Wabush and Fermont, and the expansion of two small communities on the shore of the St. Lawrence, Sept-Isles, and Port Cartier.

The public sector replaced the earlier modes of transportation by a modern airport at Sept-Isles and a paved highway joining the shore communities to the rest of the province. The private sector built airports at Schefferville, Gagnon and Wabush, to be operated by D.O.T., and to serve the northern populations as their only link to the outside world.

However, during the 1970s, the Governments of Quebec and Newfoundland participated with the private sector in building 30 miles of modern highway linking the Wabush Airport, the towns of Wabush, Labrador City and Fermont to the Mount Wright mine site. Again in 1976, the Quebec Government completed 50 miles of highway joining Gagnon to the Fire Lake mine site, so that mine workers can travel to and from their work on a daily basis, in climatized air-conditioned buses. The northern communities have every right to believe that by 1982, they will be able to travel through the country by a highway system via Manic 5 and Baie Comeau.

The shore communities were connected to the provincial power grid by Hydro Quebec in 1961, whereas the northern towns and mining operations were supplied by the private sector.

It is indicative of the beneficial interaction of the public and private sector in regional development to mention that the Churchill Falls power project transported all its overland traffic from Sept-Isles to Esker on the Quebec North Shore and Labrador Railway system, and thence to Churchill Falls using the road built for the construction of the Twin Falls power project in 1961 by the private sector.

When the Iron Ore Company's concentrator and pellet plant came on line in Sept-Isles, they were energized by Hydro Quebec from the provincial grid connected to Churchill Falls. The Mount Wright mine site and Fermont were the first northern developments to be linked to the public utility system by a 98-mile transmission line built by the private sector and tapped off the lines coming from Churchill Falls. The Sidbec-Normines mining operations at Fire Lake are also fed by Hydro Quebec from the Normand Substation at Mount Wright over a 36-mile 161 kv line also built by the private sector.

The following table describes how Sept-Isles has developed over the last 25 years.

Year	Population	Property Value
1950	1,800	\$ 743,275
1954	5,000	10,598,217
1958	10,100	28,243,307
1962	17,000	78,054,035
1966	19,500	99,930,000
1970	22,000	155,347,450
1974	29,000	238,000,000
1978	37,000	551,000,000

Because of its geographical location and transportation facilities—an airport, a harbour, a highway, and a railroad—Sept-Isles was earmarked to become the centre of activity for supply industries to service the mining operations with spare parts, replacements, and consumer goods.

On the other hand, I believe that the presence of a well developed community at Port Cartier, along with an important man-made harbour and a railroad snaking north-westerly in the river valleys and over summits were highly instrumental in bringing to that town, in 1968, grain elevators of the Dreyfus Group, and in 1972, the Rayonnier mill, Quebec's major rayon pulp mill.

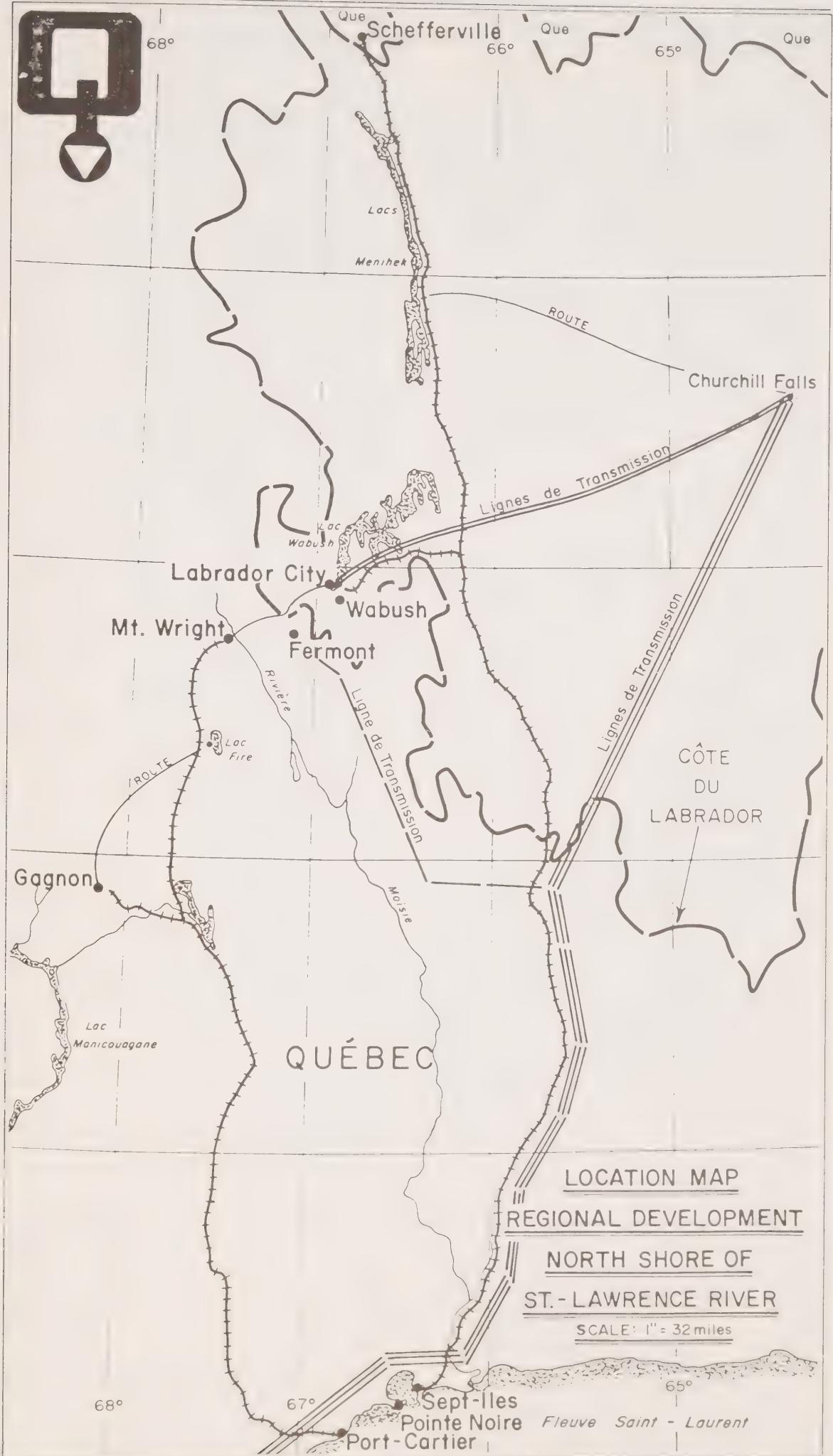
*"Has Canada a future as a metal producer in the 1980s?"*

Canada ranks third in the world for the value of its mineral production (excluding petroleum products), and since consumption of finished products is directly proportional to the population, this country is also the top exporter of ores.

The iron ore industry in northeastern Quebec, non-existent in 1952, had a production capacity of 15 million tons in 1962, and using the basic infrastructures built for and between Sept-Isles, Schefferville, Port Cartier and Gagnon, was developed to 32 million tons in 1972, and presently has an annual rated capacity of 56 million tons. Of this tonnage, less than 10 per cent is transformed to metal and finished product in Canada.

Canada is believed to be the best hunting ground for minerals by both national and foreign mining companies. But I am convinced that our relative rank in the world as an ore producer will be maintained only through the enactment of more competitive and stable fiscal policies by all levels of government with regards to the mineral exploration and mining companies.

Also, considering that over 25 per cent of the capital investment in a mining development project, and over 30 per cent of the annual salary from the production activities of such a project flow back to governments, I believe this country has ample negotiating room to entice the private sector to bring the ores to the metallic stage and even further in this country, in order to relinquish our top rank as an exporter of raw materials, and become an important metal producer in the late 1980s and beyond.



## 2. Occupational health and safety in the Mining Industry

by Bob Green

I would like to extend the thanks of my organization for being invited here to this conference and for being given this opportunity to address the delegates. My union, the Canadian Association of Industrial, Mechanical and Allied Workers represents 2,000 workers in the mining industry employed at five open pit mines in British Columbia. We are the largest open pit metal mining union in British Columbia.

Today I would like to speak about a major concern of my union which is occupational health and safety in the mining industry.

Most of you are from provinces in which occupational health and safety is about to be or already has been consolidated into one branch or division in one department or ministry. British Columbia at present is rather unique in Canada in that, at present, no consolidation is publicly contemplated by the provincial government. One of the major reasons for this, we feel, is that the Worker's Compensation Board has had jurisdiction for nearly all workers covered by provincial labour legislation since the early part of this century. Such new innovations for the rest of Canada as mandatory joint worker-management occupational health and safety committees has been a requirement since the 1920's in British Columbia.

The record of the W.C.B. in industrial health and safety has been energetic compared with many other worker's compensation boards across Canada which recently held or presently hold jurisdiction in this area. Because of this, the trade union movement in British Columbia has lent its support to the retention of the health and safety jurisdiction with the W.C.B.

One major gap in the W.C.B.'s activities in British Columbia, however, has been in the mining industry. The activities of the British Columbia Ministry of Mines pre-dated that of the W.C.B. in the health and safety area and because of this has retained jurisdiction to the present day. We in the labour movement, however, feel that the transfer of jurisdiction of occupational health and safety from the Ministry of Mines to the Workers' Compensation Board is much-needed and long overdue.

Why does the proposal for a transfer of jurisdiction take place at this time? One reason, of course, is that B.C. must be cognizant of the trend for the consolidation of health and safety jurisdictions in other provinces. The Ham Commission, of course, pointed to inadequate health and safety standards and enforcement in the mining industry in Ontario. An omnibus jurisdiction is contemplated as a result of this. Saskatchewan consolidated mining health and safety in its well-known Occupational Health and Safety Division of the Ministry of Labour several years ago. The Province of Alberta announced the final transfer of jurisdiction from the Mines Department to their Occupational Health and Safety Division several months ago. Manitoba likewise, has recently transferred jurisdiction of mining health and safety from the Ministry of Mines, to the Workplace Safety and Health Act.

Quebec is seriously contemplating the move. The primary focal point for health and safety in industry in the maritime provinces remains with their W.C.B.'s while health and safety in mining has tended to

remain with mining, although industrial hygiene is usually a joint responsibility with other departments. We are also aware of a proposed consolidation of jurisdiction including mining in the Northwest Territories.

The reason in B.C. for the timeliness of the proposal for a transfer of jurisdiction is, we feel, a result of the trend to the replacement of underground operations with surface mining. In 1973, 75 per cent of all miners in B.C. worked in surface mines. 90 per cent of all workers involved with mineral extraction were employed on the surface.

The particular hazards associated with underground operations are becoming of less significance as the vast majority of mining workers are employed in open pit operations. The traditional milieu of employment of mines is becoming obsolete as open pit miners move easily from construction site to saw mills and pulp mills and back again in the course of their working lives. Since they are covered by W.C.B. rules on construction and in the wood processing industry, they expect the same rules to apply at the mine site and are surprised when they find another piece of legislation confronting them.

That piece of legislation is the Mines Regulation Act (for metal mining, the equivalent for coal is the Coal Mines Regulation Act which has similar provisions). One of the major strengths of the Mines Regulation Act is its detailed rules for underground operations. Little is left to regulatory guess work concerning underground mines. However, that strength is also its weakness since fewer and fewer miners are employed underground.

The provisions of the Act protecting workers in open pit operations are woefully inadequate compared to the Industrial Health and Safety Regulations of the Workers' Compensation Board, particularly with respect to industrial health. For example, the levels of permissible asbestos dust in mining are 2-1/2 times the level allowed in the rest of B.C. industry. Over 500 air contaminants are regulated by the W.C.B. while only 20 are governed by a directive from the Chief Inspector of Mines. There is no question that 20 hazardous air contaminants are present in B.C. mines.

A letter from the Chief Inspector indicating that where the Mines Regulation Act is silent, another "existing rule or regulation covered by the Workers' Compensation Board or other agency" will govern is a step in the right direction we feel, but is indicative of the inadequacies of the Mines Regulation Act and of the necessity for a transfer of jurisdiction.

As a matter of principle, we support the proposal that the jurisdiction for occupational health and safety be transferred from the B.C. Ministry of Mines to the B.C. Workers' Compensation Board for a number of reasons.

The Ministry of Mines has mineral production as its primary and overriding concern. Indeed, we have heard only one comment from the two most recent B.C. Mines Ministers on occupational health and safety. The comment was from the former Minister of Mines (while in office) to the effect that it would be unsafe to allow women miners to work underground.

The Workers' Compensation Board, on the other hand, has as its exclusive task, workers' health concerns.

The financing for the inspection branch of the Mines Ministry comes from the Consolidated

Revenue Fund, i.e., from the taxpayers of B.C. W.C.B. funds are obtained from autonomous assessments levied on industry at the point of production.

Thus, taxpayers are subsidizing the B.C. mining industry by paying for its occupational health and safety responsibilities. The Mines Ministry's inspection branch is dependent upon provincial budgeting which is unrelated to workers health and safety concerns.

There is no provision in the Mines Regulation Act mandating public hearings before the Act is changed. Although it has been the practice to hold public hearings, there is no guarantee that the comments of the participants will be seriously considered. The W.C.B., by contrast, must hold hearings which must be duly announced in provincial newspapers according to the Workers' Compensation Act.

The Ministry of Mines of course has a relatively small inspection staff with non-existent laboratory, computer research, or other back-up systems internal to the branch. The W.C.B., on the other hand, has sophisticated laboratory computers, and research facilities enabling analysis of complex data.

The Ministry of Mines inspection branch has no education capability as such, although representatives of the branch make an effort to attend meetings to answer questions and engage in discussion. The W.C.B. has a large educational component within Prevention Services. W.C.B. staff with specialized training in the educational field are available with an array of audio-visual backup equipment to participate in health and safety training seminars on a wide range of subjects.

The best occupational health and safety standards in the world are meaningless if they are not complied with. And we in the labour movement are convinced that we cannot rely on voluntary compliance from employers.

The enforcement powers under the Mines Regulation Act are relatively weak, giving only the power to prosecute to seek a summary conviction. Prosecution is an extremely frustrating, time-wasting activity for inspectors and has been used by the inspection branch quite sparingly. The W.C.B., on the other hand, has the power to levy penalty assessments on employers who are negligent in providing a safe and healthy workplace and have used this power extensively and with considerable success.

We would refer the delegates to our comprehensive brief on the Mines Regulation Act (which each provincial delegation has a copy of) which contains some significant and unique statistics regarding the level of accidents and ill health in the B.C. industry. For more in-depth discussion of the transfer of jurisdiction question than I have been able to give you today, I refer you to pages 31 through 78 of our brief.

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**Aggregate resource  
management seminar**

**Séminaire sur la  
gestion des agrégats**

## Developing The Data Base For An Aggregate Inventory—A Review of Quaternary and Paleozoic Geology Mapping Progress in Ontario.

by Owen L. White

To manage a resource, we must know our resource—how much, how good and where it is.

Our presentations this afternoon are threefold: First, I plan to review the manner in which our data gathering processes have developed over the years to bring us to the present state of knowledge of our aggregate resources in Ontario. Secondly, my colleague George Burwasser will outline the current aggregate inventory program and thirdly, another colleague, Sherry Yundt, will discuss the policy and management aspects of the aggregate program in Ontario.

The data base on which our inventory programme and policies have been based is of the highest quality. Most of the credit for that must go to the foresight and leadership of my predecessor, the late Dr. Donald Hewitt. But the task is by no means completed and although we are fast approaching the completion of the first mapping of the surficial deposits of Southern Ontario, we have only started to "scratch the surface" in Northern Ontario.

But then, the circumstances in the past (as still today) have not been the same in the north as they have been in the south. Nevertheless, changes are occurring, and in anticipating those changes, we are adopting new procedures and new techniques to acquire the information we need in Northern Ontario.

In Ontario, the mapping of surficial deposits and attempts to evaluate sand and gravel deposits were only spasmodic before the 1940s.

In 1915 and 1917 maps and reports on the surficial deposits in the Rainy River District and the Ottawa area were produced for the federal Geological Survey by W.A. Johnston. Soils for agricultural purposes were the major economic consideration, but sand and gravel deposits were discussed. In 1914, and again in 1915, Leopold Reinecke (1916, 1917) conducted road material surveys in several parts of Ontario, but these were restricted to a large degree to potential highway routes and to resources "lying within wagon-hauling distances" (Reinecke, 1917).

In 1917, A. Ledoux visited the most important sand and gravel deposits in southern Ontario and in a report published by the Ontario Bureau of Mines concluded that such deposits were "very numerous in the southern and eastern parts of Ontario". This appears to be the first review of sand and gravel deposits in Ontario.

After this flourish of activity during World War I, little other work was undertaken until after World War II. A surficial geology map was included in a report

on Thunder Bay in 1931 (Tanton) and in 1933 Coleman's classic map and report on the pleistocene of the Toronto Region was published by the Ontario Department of Mines.

In southern Ontario we were very fortunate that Chapman and Putman published in 1951 their comprehensive *Physiography of Southern Ontario* with

four maps at a scale of one inch to four miles. Although at a fairly small scale, these maps provided the continuing link between the maps of the quaternary (or pleistocene) geology of southern Ontario, subsequently published at more useful scale (1:50,000 and one inch to one mile) which have, in turn, become the base for our aggregate inventory.

The post-war mapping of the quaternary deposits was initiated by the Geological Survey of Canada (G.S.C.) and then a few years later by the Ontario Department of Mines, the federal survey mapping at one inch to two miles to both the north and east of Toronto and the provincial department mapping the Toronto boroughs and areas to the west of Toronto. In the middle 1950s, P.F. Karrow joined Don Hewitt and was responsible for mapping several areas in and around Toronto. Other areas were mapped by contract.

After a decline in mapping activity in the mid sixties, W.R. Cowan was appointed to Hewitt's staff and from 1968 to 1974, five additional quaternary geologists and two geological assistants were added to the staff. Consequently, the pace of quaternary geological mapping picked up considerably. Over the years, the G.S.C. has continued to map in eastern Ontario, but not always at a scale of one inch to one mile or better. At the moment, most of southern Ontario is mapped, or in progress, and mapping should be completed by 1981.

Maps of the paleozoic bedrock formations in southern Ontario have been available for some time at a variety of scales and over the years both the federal government (through the Mines Branch and the Geological Survey) and the provincial government have published studies on the limestones and shales of the region.

With the appointment of a paleozoic geologist in 1972 the progress of paleozoic mapping at a scale of 1:50,000 or better has picked up considerably. Although prompted by the studies required for the Niagara Escarpment Commission, the paleozoic mapping has been extended and will be further extended to other parts of the province where information at the required level of detail is still required.

Although the paleozoic bedrock in Ontario most suited for aggregate purposes is associated with the caprock of the Niagara Escarpment, other paleozoic rocks in other parts of the province are also used as a source of crushed stone.

Later this month a detailed study of the dolostones of Manitoulin Island will get under way with initial drill hole samples being obtained for chemical and physical analysis.

In Northern Ontario, the situation is not so advanced. Mapping by both the G.S.C. and O.D.M. has proceeded over the years (the G.S.C. has been involved in such areas as Rainy Lake (Johnston, 1915), Thunder Bay (Tanton, 1931), Red Lake-Lansdowne House (Prest, 1963) and North Bay-Mattawa (Harrison, 1972) while the O.D.M. (and O.G.S.) has published reports on Sudbury

(Burwasser, 1972A, 1972B) and Thunder Bay (Burwasser, 1977) with several areas presently in progress. But these activities still leave vast areas untouched despite several development projects which cross the area as well as the local town and mine sites etc.

In an effort to overcome this lack of data either for general planning or for locating gravel sources, a program of engineering geology terrain evaluation (N.O.E.G.T.S.) was initiated last year and is expected to continue into next year.

This project involves the evaluation of the terrain particularly for engineering purposes. Potential sources of aggregate supplies are especially sought after. The entire area of 143,000 square miles (370,000 sq. kms) will be evaluated in terms of landform and material. Final maps (at 1: 100,000) will be published in the format shown here. In addition, derived maps—prepared especially for a specific purpose—will be published as examples of what can be done with the basic data maps. A user's manual will also be published as basic data maps are directed at planners and engineers rather than other geologists. More detailed ground mapping in the next few years is expected to follow up the terrain evaluation in areas of greatest need.

Beyond the northern limits of N.O.E.G.T.S. program, the Ontario Centre for Remote Sensing is proceeding with a physiographic mapping program extending to the shores of Hudson Bay. Although only at a scale of 1:250,000 this program, together with the other projects in progress will provide a

much more detailed look at Ontario's landform (and hence, potential gravel supplies) than has hitherto been the case. It may be some time (if ever) before an aggregate inventory is proceeded with in the north as is the case in the south, but the data base currently being acquired is an excellent start for subsequent work. This has been adequately demonstrated in recent months when geological data has been made available to aggregate studies in progress in the Thunder Bay and Sudbury areas.

With the end in sight of the "first-time" mapping of both surficial and bedrock formations in Southern Ontario, much of our effort will be diverted to Northern Ontario's aggregate needs.

At the same time there will be a need to refine some of our data especially as resources become scarcer and demands on land become greater. We may well need to apply geological studies to help solve some of the problems related to the quality of known deposits, as well as to the search for possible buried but economically valuable deposits. Demands for land in the vicinity of major cities may well lead to the underground mining of aggregates especially where the need for underground space is the prime factor in such developments.

Such activities will certainly require a much greater geological knowledge of the subsurface than we presently have.

The character of the geological investigations may well have to change in the not-too-distant future, but a major thrust of our scientific endeavours will always be related to the establishment and definition of the data base for the aggregate resources of this province.

## **The Aggregate Resources Inventory Program**

by G.J. Burwasser

It is necessary to have basic, technical background information as a component of the total planning procedures in order to develop effective planning policies for the balanced utilization of Ontario's aggregate resources. The municipal, regional and provincial planners who are responsible for land use policies rarely have formal training or experience in the fields of geology or mining. They depend on advisors to supply mineral resource information during the evaluation stages of planning. They must assess the impact of proposed extractive policies on other land-use requirements and on the plan as a whole. The necessity for such for such assessment arises from a variety of economic and social needs, not the least of which is competition in an increasingly urbanized society for physical space in which to house our families, build our industries, grow our food and enjoy our leisure time. That the geological information be as precise as possible should go without saying. What may not be immediately recognized is that the information must be in a form which can be readily understood and used in the total planning context by individuals with diverse backgrounds, both technical and non-technical. To this end the Ontario Geological Survey of the Ministry of Natural Resources is publishing a series of Aggregate Resources Inventory Papers developed and produced by its Engineering and Terrain Geology Section.

These studies are essentially geological in nature, but they must be applied, eventually, in the socio-economic context of life in Ontario. It is no exaggeration to say that one corner stone of our quality of life is set on rocks. This hotel is built of cut stone. The Front Street pavement is more than 95 per cent sand.

The CN tower consists almost entirely of crushed stone and cement. Our daily lives are constantly enhanced by products derived from mineral aggregate. It is the major raw material of Ontario's building and construction industries. Every year over 100 million metric tonnes of gravel, sand and stone are extracted in Ontario, exceeding the production of any other non-metallic or metallic commodity mined in the province. Aggregate extractive industries provide more than 6,000 jobs in Ontario and are indirectly responsible for scores of thousands more.

There are also negative impacts of aggregate extraction. The noise and the dust occasioned by the transportation of aggregate materials are of concern to us all. The disruption of soil and water are of particular concern to conservationists, legislators, engineers and planners. I think it is safe to say that as individuals, Canadians are among the best informed people in the world about the negative aspects of most environmental concerns. It is through the knowledge of all aspects, especially in land-use planning, that environmental conflicts are resolved and the quality of life preserved.

Information about aggregate deposits is found in studies which fit into three categories. Academic studies on every conceivable aspect of gravel, sand or stone have been sponsored by universities,

government agencies and private foundations. Project-oriented, site specific studies usually emanate from the industrial sector or from agencies, such as Ontario's Ministry of Transportation and Communications. The third type of study which we will now consider, is the inventory designed to compile data, usually of reconnaissance nature, and to provide guidance for the utilization of aggregate resources.

### **The Aggregate Resources Inventory Project-**

The objective of the Aggregate Resources Inventory Programme is to provide planners in Ontario with the Geological information required to include potential aggregate resource areas in their planning strategies. To achieve this objective the Engineering and Terrain Geology Section, under the direction of Dr. Owen White, has assembled a team of resource geologists to collect, analyze and present mineral aggregate data in documents which can be used to aid decisions effecting our aggregate resources. One hundred seventy-five municipalities (townships, towns, cities) in southwestern and south central Ontario, each "designated" under the Pits and Quarries Control Act (1971), are presently included in the program. With municipalities averaging 100 square miles in area the program covers more than 20,000 square miles. A co-ordinate programme is being carried out by the Regional geological staff in Southeastern Ontario. Resource inventories will be carried out for 206 municipalities comprising 232 geographic townships in Southeastern Ontario at a total cost of slightly less than \$600,000. This series of reports will contain the most current information available to the Ontario Geological Survey and will supercede our previous published aggregate resources inventories.

The inventory of structural materials includes bedrock derived crushed stone as well as naturally formed sand and gravel. Dolostone, limestone, granite, marble and traprock are mined and crushed for direct use as construction material. Certain limestone and dolostone formations are pulverized for use in brick and tile manufacture. Monument and building stone may be produced from nearly any type of bedrock which meets the performance specifications for the product desired. Natural gravel products include round stone and crushed stone, both usually mixed with sand, for use in structural and ornamental concrete, as highway or building foundations, or as filters for liquid-based compounds. Sand, by itself, can be used as cushion, fill or cover material and the range of specialized industrial sand products is impressive, including bricks, mortars, castings, filters and hydroponic growth media, to name just a few.

The list of personnel involved in the programme is also fairly impressive. Two permanent staff members of the Engineering and Terrain Geology Section supervise the daily operations of the aggregate inventory group and co-ordinate the external activities through which information is collected and disseminated. The inventory group con-

sists of these two staff members plus six contract geologists working as a team on county or regional study areas. Geologists, mines co-ordinators, mineral resources, and pit and quarry inspectors from two regions and 10 districts of the Ministry of Natural Resources provide invaluable information about local operations, licences and activities. The staff of the Aggregate Engineer's Office at MTC provide performance specifications and the Hydrology Branch at MOE provide subsurface data. Personnel in the MNR's Mineral Resources Branch, Surveys and Mapping Branch and Scientific Review Office have supplied assistance and many of the physical requirements needed to produce the inventory documents. Regional planners, municipal planners and representatives from industry have all aided us with their comments and encouragement. Even our own secretarial and typing staff has managed not to commit mayhem when faced with some of our more outrageous requests. All these contributions are much appreciated and gratefully acknowledged; especially because time is short. Since February, 1977, we've completed 60 per cent of the data collection and all the documents will be published by July, 1980.

**The inventory methodology**—The way in which the inventory is carried out is fully described in each report. Briefly, it consists of three phases: compilation, interpretation and communication. The compilation of all possible data sources constitutes the bulk of the collection task. Geological maps, aerial photos and topographic maps are examined and supplemented by a limited amount of field checking. Published and unpublished maps, reports, files and printouts from the Ontario Geological Survey, the Ontario Ministry of Transportation and Communications, the Ontario Ministry of Environment and all of their federal counterparts are researched. Communications with Ministry, regional, district and municipal personnel established. External information from consultants, university and industrial sources is also being considered.

In the interpretation stage, the boundaries of aggregate resource bearing deposits are identified and their areal extent calculated. Overburden thickness, as well as the workable thickness of the deposits are determined and a volumetric estimate of the resource is made. The estimate includes a depletion assessment to account for previously extracted material which is unavailable for extraction. Gravel content (for unconsolidated deposits), deposit origin or rock type and any known quality limitations are re-scored for each resource area.

**The documents**—One report, accompanied by three maps, will be published for each municipality (township or city) studied. Since the area municipality is the basic planning unit in Ontario it was selected as the most appropriate level for presentation. Each report contains a description of the inventory methodology along with detailed information on the deviation of the maps. Written and tubular assessments of the major aggregate resources in the municipality form the core of the report. The geographic and geologic framework of the municipality is described and selected sand and gravel and/or bedrock resources areas are delineated. Selected resource area are those in which a major aggregate resource is known to exist. They should not be considered as permanent, single-use land units which must be incorporated in an official planning document. They definitely should be considered as the sites of valuable, fixed-location, non-

renewable resources which can be developed only where they occur. The descriptive terminology and explanation of utilization of the resource types are summarized in the report appendices.

The core materials of the report, the assessment of the municipality's aggregate resources, is presented visually on three maps of the study areas reproduced at a scale of 1:50,000. Map 1, showing the distribution of sand and gravel deposits, represents a comprehensive inventory of all natural granular materials in the area. A deposit symbol keyed to the map legend summarizes the gravel content, average thickness, geological type and known quality limitations of each deposit. Selected data points and the present distribution of extractive sites are shown for the unconsolidated material within the municipal jurisdiction. Map 2, shows the viable resource base of the study area. It displays selected sand and gravel resource areas at three levels of significance derived through the assessment of site specific criteria such as deposit size, aggregate quality, location and setting. Regional evaluative criteria are also outlined in the text for each major deposit. Map 3 presents the municipality's bedrock resources and combines the distribution and selection information in a single presentation. This is possible due to the greater extent and lower variability of consolidated material. The assessment criteria vary slightly from those used for unconsolidated aggregate but are essentially similar.

**The applications**—Our stated objective in this program is to provide information which will assist the development of rational aggregate resources land-uses policies. The context and application of this information is of vital concern to us all, although, as an entity, the Ontario Geological Survey has no control over its use. We act in the capacity of advisors, providing what might be termed expert testimony. The data base reflects the most recent information at our disposal. The resource area selection represents the considered opinions of numerous individuals working in the aggregate resources field. The total document is our commitment to improving communications among the responsible agencies and increasing the quality and ease of decision making. Although aggregate deposits are plentiful in total throughout Southern Ontario, their distribution, extent and quality are the result of unique geologic events. It is not an easy matter for a scientific political or planning organization to decide alone which of the resources areas are best suited for protection and possible development. The proximity of an aggregate source to a market area may be fully as important, economically, as its suitability for use in the manufacture of a specific aggregate product. Its location in urban-fringe areas places it among competitive land-uses whose priorities must be decided upon to maintain balanced utilization of all our resources. We believe that a sound knowledge of the total aggregate resource base, on both local and regional levels, is required to develop comprehensive planning and management strategies. The Aggregate Resources Inventory Program, based on geologic information and interpretation, is not presented as a planning or policy document in itself, but as a vital component of the total planning process.

## Protecting Mineral Aggregates— A Provincial Government Role—The Ontario Experience

by S.E. Yundt

Mineral aggregates are a provincial problem, unique to each individual province. The geology, urban development, industrialization and population varies dramatically from province to province and, as a result, the solutions found in one province may not work in entirety in another province. However, it is obvious that there are many aspects of policy and legislation that should be common to all provinces. Some provinces may only need strict legislation around urban areas. A common sense approach should be used to fit the solution to the magnitude of the problem.

The main reason Ontario has been so involved with the mineral aggregate problem is due to land use conflict and environmental concerns in high production areas. Citizen groups were successful in having municipalities impose restrictions on the aggregate industry. The Ontario government recognized there was a major problem, in that, there was an eventual risk of total sterilization of the aggregate resources, if action was not taken. Your provincial problem may be quite different.

Another reason Ontario has advanced so rapidly hinges on the fact that Ontario produced 36 per cent of Canada's value of structural materials in 1977, followed by Quebec with 29 per cent. Ontario has the highest dollar value, the highest tonnage annually, and the largest number of pits and quarries, in Canada. Ontario faced the greatest problem and responded accordingly.

### Structural Materials\* Value 1977

Province	Value \$000	Percentage of Total
Ontario	415,918	35.7
Quebec	342,516	29.4
Alberta	119,022	10.2
British Columbia	107,572	9.2
Manitoba	67,447	5.8
Saskatchewan	32,933	2.8
Nova Scotia	32,532	2.8
New Brunswick	28,893	2.8
Newfoundland	15,356	1.3
Prince Edward Island	1,800	.2
Total Canada	1,163,989	99.9

\*including clay products, cement, lime, stone and sand and gravel.

Source: Statistics Canada—Canada's Mineral Production Preliminary Estimate 1977

Ontario started to develop legislation related to pits and quarries in the late 1960s and passed The Niagara Escarpment Protection Act in 1970 and The Pits and Quarries Control Act in 1971. This latter legislation proved to be inadequate so the Ontario Mineral Aggregate Working Party was established in 1975 to investigate and make recommendations for a mineral aggregate resource management policy leading to new legislation.

The Ontario Ministry of Natural Resources staff is quite prepared to assist other provinces, in any way possible, to understand the process Ontario has

gone through in developing legislation and policy. First, a province must come to grips with the magnitude of its problem and examine with care an approach to resolving it. In Ontario, through the working party process we have spent 2-1/2 years deeply involved in coming to grips with our problem.

Hopefully, other provinces can benefit from the reports, techniques, policy and legislation we have developed, as well as, learning from the mistakes we have made. Our approach to mineral aggregate problems lies in getting all concerned parties—the local residents, the industry, the government at all levels, the environmental groups and the universities, to make a commitment to work together to produce policies and ensure a continuing supply of mineral aggregate for the people of Ontario with the least possible environmental disruption.

A few historical facts must be outlined to illustrate how the Province of Ontario arrived at where it is today with regard to mineral aggregate legislation and policy.

**The Early Years**—Unrest in the later 1960's between the aggregate industry and residents of heavily extracted municipalities was threatening the availability of aggregate resources. As a result, some local municipalities began imposing severe restrictions and by-laws that threatened the very existence of the aggregate industry. Resources were being locked up by enforced planning restraints. This problem was identified by the late Dr. D.F. Hewitt, of the Geological Branch, in the early 1960s and he lead a one-man campaign to have others understand the problem and how it might be solved.

In November, 1969, a small investigating committee reviewed briefs submitted to the then Prime Minister, the Honourable John Robarts, by the Aggregate Producers' Association of Ontario and the Quarry Operators Section of the Ontario Mining Association. The investigating committee recommended that a technical committee be established to investigate and make recommendations with regard to provincial legislation.

**Mineral Resources Committee**—In January, 1969 the Ontario government responded by establishing the Mineral Resources Committee to investigate the situation. This committee was composed of representatives from the government and the extractive industry, but failed to represent the municipalities. For this reason, many felt that the initial report was unsatisfactory. A supplementary report did address municipal concerns, dissatisfaction from the municipalities still prevailed.

**Niagara Escarpment Protection Act, 1970**—The Niagara Escarpment Protection Act, passed in 1970 was the first outcome of the Mineral Resources Committee. This Act was introduced as interim legislation to protect the Escarpment area pending passage of province-wide pit and quarry legislation.

**The Pits and Quarries Act, 1971**—**A) History:** The Pits and Quarries Control Act, an act to regulate pits and quarries and to provide for their rehabilitation received third reading July 28, 1971. This was proclaimed law by the Lieutenant-Governor on

November 3, 1971. Between third reading and proclamation one inspector was hired. C.F. Foster, as supervisor, joined the Ontario government at this time and struggled along with the limited staff, working out of their homes, with no office space or equipment. These really were our pioneering days.

B) *Designation*: The Pits and Quarries Control Act applies in designated townships only. In December, 1971, 42 townships in the sensitive Niagara Escarpment corridor were designated. Between 1972-1974 a further eighty-two townships were designated. Between 1975-1976 another 154 townships were designated, bringing the total number to date to 278. In effect, the Act now applies to most of southern Ontario and the Sudbury and Sault Ste. Marie areas of Northern Ontario.

C) *Decentralization*: To date, almost 1600 licences have been issued in the designated townships and we now have a field staff of 24 including inspectors, supervisors and coordinators. In 1975, it was realized that the administration of the Act, the relations with the municipalities and distribution of field staff had to be decentralized from headquarters, in Toronto, to function more efficiently. All of the administration related to pits and quarries in southern Ontario is decentralized now. All policy matters are dealt with in Toronto.

D) *Intent of the Act*: The intent of the Act was to provide rules and regulations that would accelerate rehabilitation and minimize the environmental impact of pit and quarry operations while still providing for the aggregate requirements of the province. The intent of the Act is to be commended. However, with hindsight it is recognized that the Act controls but does not manage the resources.

The legislation was not intended to close down operating pits or quarries, with the result that many operators obtained licences with site plans that only met the minimum requirements of the Act. We were very lenient in dealing with existing operations. However, when new properties are involved, our procedures are rigorous and in most cases, result in a public hearing at which time all environmental and operational aspects are considered.

An area requiring refinement to the present Pits and Quarries Control Act, is the type of activity that constitutes rehabilitation. Many producers have been wrongly identifying simple housekeeping activities such as building berms, erecting fences and tree planting for rehabilitation. Although the Act requires a row of trees or a berm around the property for screening purposes, these should not be mistaken for rehabilitation.

There has been a tremendous response to the Act in its seven short years of existence and it has served as a catalyst in stimulating rehabilitation. Research conducted at the University of Guelph last summer indicated that for a study area in Southern Ontario, 35 per cent of total rehabilitation to date, occurred prior to 1971 and the rest, 65 per cent, has occurred after the passing of The Pits and Quarries Control Act. Also, not only the amount, but the quality of rehabilitation appears to be improving every year.

**The Ontario Mineral Aggregate Working Party, 1975**—In December, 1975, the Ontario Mineral Aggregate Working Party was appointed by the Ontario Minister of Natural Resources to investigate and make recommendations for a mineral aggregate resource management policy leading to new legisla-

tion. This was a new concept to the Ministry of Natural Resources for formulating policy. The working party members represented all concerned ministries, industry, elected municipal politicians, municipality staff, the Niagara Escarpment Commission and the Conservation Council of Ontario. In other words, all concerned parties were involved and all interests were represented in the report. The process also included a public participation program where open houses were conducted in several locations throughout the province and public opinion was documented. Within one year, the working party published its report, "A Mineral Aggregate Resource Management Policy for Ontario", containing 64 recommendations for new policy and legislation. The working party process was an extremely efficient and democratic one and it is highly recommended to other provinces facing similar problems. The total cost including the public participation program was less than \$125,000. One of the major issues discussed by the working party were the weaknesses of the present legislation and recommendations to overcome these weaknesses.

**Weaknesses of the Pits and Quarries Control Act**—*The first weakness of the Act is its failure to manage the resources*. There are no regulations in the Act pertaining to the protection of aggregate resources and many high quality deposits have continued to become inaccessible by being built upon. The fact that a confrontation situation between the extractive industry and the residents of the area, still exists also illustrates that the Act still has some weak points and that the industry has not always lived up to the spirit of the Act.

*The second weakness of the present Act is its failure to adequately define or provide for rehabilitation*. The working party proposes the following definition as a minimum requirement for rehabilitation:

"The land should be brought back to the level of productivity before the extraction started, and should be in a useful form harmonious with the surrounding land use."

However, it is very difficult to define rehabilitation and determine exact regulations. Every pit or quarry varies in size, shape, depth, drainage, etc. Its social and economic importance is different, as well. For these reasons, each pit must be dealt with on its own merit.

The concept of progressive rehabilitation is another area which requires better definition. The present Act only alludes to progressive rehabilitation and the working party recommends that it be mandatory. It has been defined as "planned mineral extraction with concurrent treatment of the land so that it is progressively returned to the condition described in the site plan..."

*The third weakness relates to financial remuneration to the municipalities and the rehabilitation security fees of industry*. The working party report calls for financial remuneration to all levels of government to pay for the "real" costs of aggregate extraction, especially for road maintenance, and the rehabilitation of abandoned (non-operating) pits.

A recommendation of the working party concerns the rehabilitation security fee. The present Act requires producers to submit a security deposit of two cents per ton of material removed from the pit and quarry. The money is to provide for rehabilitation on the site and it is returned to the operator if

rehabilitation does indeed take place. If, on the other hand, the operator leaves the pit abandoned then the Ministry of Natural Resources uses this security deposit to conduct rehabilitation. However, the two cents per ton security deposit was randomly selected and the insignificance of this amount is reflected in the fact that at first, few operators even bother to apply for the refund. In essence, the producers have considered this security deposit as a tax and absorbed it by increasing the price of their product.

The results of these studies indicate that annual consumption of aggregate in Southern Ontario is presently fifteen tons per person. This figure is expected to increase to eighteen tons per capita by 2001. From preliminary studies, it is estimated that per capita consumption in Northern Ontario is considerably higher than in southern Ontario.

The question is, are there reserves to fill the demands? Ontario has a wealth of mineral aggregates but they are not equitably distributed; some areas having excess amounts and others experiencing shortages. Although supplies of aggregate appear satisfactory to meet demand in southern Ontario for the foreseeable future, local shortages are likely to occur. Central Ontario which includes the most densely populated area in the province had a total demand of 72 million tons in 1976 as compared to 15 million in eastern Ontario and 20 million in southwestern Ontario. Although central Ontario does have many exceptional resources it is estimated that sand and gravel will be depleted by the year 2005 and crushed stone by the year 2025. Eastern Ontario has a surplus of crushed stone (although quality may be a problem), but an inadequacy in sand supplies. Southwestern Ontario will clearly have shortages due to few glacial deposits.

Indications are that sizeable quantities of mineral aggregates do exist in Ontario, but these sites are distant from the market areas. To meet the demand, it is probable that these resources will have to be transported to the major market areas by rail and/or water. A bulk transportation study of mineral aggregates has been proposed to examine the difficulties and realities of such a scheme. Some of the difficulties of bulk transportation include attempting to locate redistribution yards in built up areas, upgrading existing docking facilities and construction new rail links. These problems illustrate the high initial capital investment that will be required for long distance hauling and the consequent escalation in price of the final product that the consumer pays.

**Ontario's Protection of its Mineral Aggregates—**  
**A) Supply and Demand**—Before the municipalities will protect mineral aggregates for the future, they want to know what the demand will be. To date, four studies have been completed in Ontario which attempt to deal with supply and demand issues. The cost of these studies is in excess of one-half a million dollars. Reports have been undertaken for all of southern Ontario and studies for the Thunder Bay and Sudbury areas are just being completed.

A very involved econometric model has been used to forecast the aggregate demand. It is based on projections of population and value of constructing. Construction is broken down into four categories, one of which is road engineering. In 1971, road engineering in Ontario accounted for only 9 per cent of the total construction value, but consumed 59 per cent of the total aggregate used in

proportion to cost. For each \$1,000 of road engineering construction, 123 tons of mineral aggregate are used while residential building only uses four tons of aggregate per \$1,000.

**B) Geological Mapping:** Ontario presently has a rough picture of supply and knows where to expect shortages. However, to implement proper planning procedures extensive background information on location and extent of potential sand, gravel and stone deposits is required. To provide this basic surficial geological data the Ontario Geological Survey is conducting in depth aggregate inventories for all townships in southern Ontario designated under The Pits and Quarries Control Act. These inventories show all high quality sand, gravel and stone areas on 1:50,000 scale maps and are expected to be completed by 1980. This geological data will be presented to the municipalities to be used as background information in the formulation of land use policies as expressed in official plans.

After having conducted an investigation, it now appears that eight cents per ton is a more realistic representation of average rehabilitation costs. It has been estimated that to rehabilitate a flooded site by sloping and vegetating the banks, would cost \$200-\$300 per acre (\$500-\$700 per hectare). Rehabilitating a site for an exceptional after-use such as golf course can produce costs of up to \$12,000-\$14,000 per acre (\$30,000-\$35,000 per hectare). From research on agricultural rehabilitation, the entire process of rehabilitation could be achieved for \$2,000 per acre (\$5,000 per hectare) on average. This would include costs of major earthworking, addition of topsoil and fertilizing, planting and harvesting a grain crop.

*The fourth weakness relates to wayside pits and quarries used temporarily for a specific road project.* We had a communications problem with municipalities because we did not involve them in the planning and issuance of wayside permits. The municipalities in which the wayside pit or quarry was located were informed after the site was in production. The Ministry of Transportation and Communications and the Ministry of Natural Resources have now resolved this matter jointly including involving the municipalities prior to opening the wayside pit or quarry and providing for the rehabilitation of all sites.

*The fifth weakness of The Pits and Quarries Act concerns abandoned sites.* This Act has no provisions for the rehabilitation of abandoned pits and quarries which remain to scar the landscape. Although the aggregate producers are rehabilitating sites today, until these derelict sites from the past are returned to a productive land use the problem will not be resolved. It is proposed in the new Act that funds be collected from the industry, to rehabilitate abandoned pits and quarries so the problem can be resolved over a short period of time.

**C) Regional Aggregate Production Targets:** Once the aggregate supply data is available from the geological mapping, a solution is required for equitable sharing of these resources. Sand, gravel and stone must be provided to those areas that have limited resources. The Ontario provincial government has suggested the following policy:

- (1) Identifying future aggregate demand and, in conjunction with the local municipalities, developing a set of local targets for production sufficient to meet future demand for the province as a whole on a more broadly "shared" basis;

(2) Guaranteeing supplies for the future by ensuring that municipalities in the preparation of official plans and zoning by-laws designate sufficient aggregate land to achieve local targets.

D) *Official Plan:* The Official Plan is presently the most effective tool, in Ontario for preserving aggregate resources, and it is equally important to convince municipal planners that mineral aggregates must be a high priority in planning. It is up to the planners to examine the geological data in the aggregate inventories, consider existing and potential cultural restraints and then decide in accordance with production targets which areas they want to preserve for aggregate use. The aggregate resource areas would then be marked accordingly in the official plan and corresponding policies established. To preserve these resources the policies should restrict incompatible land uses such as rural estate or industrial development and instead, encourage interim and end uses such as agriculture, forestry and recreation. The Regional Municipality of Waterloo, one of the first regions to have its official plan approved, gives top priority to the extraction of sand and gravel in high quality resource areas except in cases where land has been designated for development within five years.

In the current procedure, the draft official plan is forwarded to the Ministry of Housing for approval and is circulated among concerned groups for comments. At this point, the Ministry of Natural Resources has an opportunity to review the proposed plan and ensure that adequate aggregate areas have been protected to meet the projected targets. Once the plan is accepted, all local by-laws and plans must conform to the regional official plan. Only through these official plans will supplies be protected to meet future needs.

**Conclusion**—We are now drafting new legislation—The Aggregate Act, which will be one of the most advanced pieces of legislation related to pits and quarries in North America.

We have come a long way in seven years since the passage of The Pits and Quarries Control Act, in Ontario, with a great deal of time spent educating many groups and individuals about pits and quarries. We still have a long way to go.

The British North America Act in 1867 delegated power over mines and minerals to the provinces. Therefore we believe that it is the duty of provincial authorities to protect these vital non-renewable resources for the future of all Canadians on a province-by-province basis.







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